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LECTURE II.[1]

Delivered on Nov. 19th.

MR. PRESIDENT, COLLEAGUES, AND GENTLEMEN,—In my "Physiology of the Carbohydrates," published in 1894, I brought forward a new view with respect to the disposal of the food carbohydrate within the animal system. The clue was given to it by the work which had shown that carbohydrate entered into the constitution of protein matter. By general assent, it is now admitted to do so, and thus a new position is created, providing for the application of carbohydrate in a manner that had not previously been thought of. We know that the carbohydrate of the food is to be traced to the seat of absorption in the walls of the alimentary canal, where it presents itself in the form of sugar. What now becomes of it? If it passed straight on as sugar into the blood, it ought to give rise to glycosuria in the healthy state in like manner to what occurs in diabetes. From the line of experimenting, to which reference was made at the conclusion of the previous lecture, involving the removal of the liver from the field of action, we are driven to conclude, in order to account for the existing circumstances, that there must be an influence at work at the actual seat of absorption to arrest the onward passage of sugar as such, towards the circulation.

As set forth in my published work referred to, conditions are found at the seat of absorption that suffice satisfactorily to account for the disappearance of sugar that is here observed to occur. We have, in the first place, the fact to deal with that, as can be shown by the effect of cleavage agencies, carbohydrate can be cleaved off from its locked-up state in protein, and in the next, that carbohydrate can, in the presence of nitrogenous matter, be built up into protein by the instrumentality of the synthetic power inherently belonging to bioplasm. Now, nowhere do we find such activity of protein formation existing as at the seat of intestinal absorption. Quiescence prevails at a period of fasting, but after food ingestion, extremely active bioplasmic growth starts into operation, the newly-formed bioplasm flowing, in the shape of lymphocytes, through the chyliferous vessels into the circulatory system, and giving rise to the digestion lymphocytosis which is observed to follow the ingestion of food.

Everything points to the occurrence of a

DISAPPEARANCE OF SUGAR AT THE SEAT OF ABSORPTION,

and with such an occurrence, everything falls harmoniously into line, both in relation to the conditions observed in connexion with the normal state and those observed in connexion with diabetes. But to what extent is it possible for sugar to become lost to view in this way? It is true, with our rough chemical methods put in operation outside the body, only a comparatively limited amount of carbohydrate is to be obtained from the disruption of protein, but it is evident that this is not to be taken as a measure of what may actually exist incorporated within.

Ground is given for the statement made through what is observed in the glycosuric state, induced alike by pancreas extirpation and the action of phloridzin, when the point is reached at which the eliminated sugar is solely derived from protein disintegration. The output of nitrogen being estimated, as well as the sugar, means are afforded for determining the protein destruction occurring. At first the output of sugar is large and variable in proportion to the nitrogen, on account of being partly derived from the carbohydrate (glycogen) existing in a free state in the body. In the course of time, with the observance of fasting, this becomes expelled, and then a fixed relationship is found to present itself between the outgoing nitrogen and sugar. From the nitrogen obtained, the amount of protein disintegrated can be calculated, and thus the data are given for determining the relation subsisting between

PROTEIN DISINTEGRATION AND SUGAR LIBERATION.

Reckoning upon the basis of the information in this way supplied, it may be roundly stated that protein yields up about half its weight of sugar, which may rationally be taken to have been previously incorporated with it from the food.

The disappearance of absorbed sugar by synthesis into protein before passage from the mucous membrane of the intestinal canal, harmoniously fits in with the absence of glycosuria as a result of Eck's fistula. With sugar locked up in protein reaching the general circulation through the lacteal system, the position is unaffected by the experimental prevention of the passage of the portal blood through the liver. Only a variable portion of the absorbed sugar would be left to find its way into the portal blood. I expressed myself upon this matter in my recent work on "Carbohydrate Metabolism and Diabetes," p. 66, 1906, in the following terms, and the remarks were made before the information supplied by Eck's fistula had been taken into consideration. "As yet I have only spoken of the assimilation of carbohydrate by being built up into proteid through the agency of bioplasm. Probably, when there is no particularly large supply of carbohydrate to be dealt with, this is the main result that occurs. When, however, the supply is extensive, it is evident that some escapes being disposed of at the seat of absorption, and thence reaches the portal blood. At a period of fasting, and likewise after the ingestion of animal food, the portal blood, as regards the amount of sugar present, corresponds with that belonging to the other parts of the circulatory system. After a free supply of starchy food, however, sugar may be found to be present in the portal blood to a considerably larger extent than anywhere else."

What is contended for then [illegible] hat the main

DISPOSAL OF THE ABSORBED SUGAR

is effected by the assimilative action occurring within the mucous membrane of the intestinal canal, and that what escapes being disposed of here, passes through the portal vein to the liver, which exerts a supplementary action in checking its flow into the general circulation by producing transformation into glycogen. The conditions existing in connexion with Eck's fistula are of a nature to affect the latter action, and not the former, and thence it follows that as long as the ingested carbohydrate falls within the capacity of being disposed of at the seat of absorption in the walls of the alimentary canal, there will be no passage of sugar occurring into the general circulation, and, as a consequence, no glycosuria; but if the carbohydrate stands beyond the capacity referred to, sugar will be reaching the portal vein, and, passing through Eck's fistula, will flow into the general circulation and constitute the source of glycosuria. Now, according to the statement made by De Filippi upon the strength of his experiments with Eck's fistula, glycosuria was not observed after the administration of starchy food, but was observed after the administration of sugar when the quantity given reached a certain point which stood below that which was found to be required to produce glycosuria in the normal state, which means the existence of a diminished tolerance.

It is seen from the experiments recorded in my "Physiology of the Carbohydrates," p. 105, on the condition of the portal blood after the administration of carbohydrate food that, in the dog, there is in no instance any great effect produced on the sugar content. In the rabbit it is otherwise. In some of the instances in this animal, the figures after food come out conspicuously high. The highest in the list stands at 4·590 per 1000 before hydrolysis and 5·330 after. In many of the others, only a somewhat slight increase is observable. The tendency of the operation would be to give higher figures than for the actual circulating state, on account of the blood being somewhat delayed in the capillaries and

[1] Lecture I. was published in THE LANCET of Nov. 21st, 1908, p. 1499.

being thereby put into a position to take up more sugar than it might otherwise do.

The bearings connected with the

DISPOSAL OF CARBOHYDRATE BY SYNTHESIS INTO PROTEIN

at the seat of absorption have been fully discussed in my "Carbohydrate Metabolism and Diabetes" already referred to (*vide* pp. 54 to 64). The lymphocyte is the agent concerned in the process, and the method by which the synthesis is effected is by bioplasmic growth. It is known that, in the mucous membrane of the intestine, there is a very active growth and renewal of lymphocytes carried on in concurrence with the absorption of the products of digestion. The rôle of the lymphocyte found in this situation is to grow upon the absorbed material supplied to it from the food. As occurs in conformity with a general law applying to living matter, the bioplasmic molecules take to themselves, from the molecules around, those of suitable configuration for being linked on by the combining influence of affinity. Thus the sugar molecules become built into the newly formed protein complex, and in this state are carried, within the lymphocyte, into the circulatory system.

What next occurs is that the lymphocytes undergo autolysis. Proof is afforded that this phenomenon actually takes place by the fact of the systematic disappearance that is noticeable after their entry into the blood. Accompanying each intake of food, there is a flow of lymphocytes into the circulatory system, which is followed by a subsidence till a fresh intake of food occurs. Thus is afforded a source for the fibrinogen, globulin, and albumin of the blood. It cannot be conceived that these bodies arise otherwise than through the medium of a preceding bioplasmic formation, and viewed in this way, the phenomena, as I have shown in the work referred to, not only receive the support of observation, but fit in consistently with the line of procedure that meets what is wanted in connexion with the matter. Locked up in the protein constituents of the blood in the manner depicted, the sugar molecule derived from the food is placed in a position to be transported from the seat of absorption to that of utilisation without running off with the urine.

I have been speaking about the course taken by the carbohydrate portion of the food, and it is interesting to note

THE CLOSE ANALOGY THAT EXISTS

between what occurs in connexion with this portion of the food on the one hand, and the nitrogenous portion on the other. With both, the first step is to place them, by enzyme action within the alimentary canal, into a suitable state for absorption and subsequent bioplasmic incorporation. I strongly hold the opinion which I urged in my "Physiology of the Carbohydrates" published in 1894, that what next occurs, as well for the products of digestion coming from the nitrogenous principles of food as for those coming from carbohydrate matter, is their assimilation, or re-synthesis, at the seat of absorption, into the proteins that are destined to be transmitted through the absorbent system to become proteins of the blood.

In former times, it was considered that it sufficed for the breaking-down process by enzyme action to be carried as far as the stages of albumose and peptone,—the extent to which it is carried by pepsin, and to which it is in the main carried by trypsin. Latterly, however, the view has sprung up that hydrolysis is carried to the production of the amino-acids; erepsin, which is discoverable in the mucous membrane of the intestine, being the agent that possesses the power of accomplishing this supplementary work. Cohnheim,[2] after showing the existence of erepsin in the mucous membrane of the intestine, speaks of it as holding an analogous position in connexion with protein digestion to that held by glucase in connexion with starch digestion. Whilst the latter, it is said, hydrolyses maltose, derived from the action of diastase, into glucose, erepsin hydrolyses the albumose and peptone, resulting from the peptic and tryptic digestion of protein, into the amino-acids, and in keeping with this view, it is stated to be found that health and nitrogenous equilibrium are capable of being maintained in animals fed upon these products in place of the parent protein.

What is wanted is that the molecules produced, whatever they may be, should be of a configuration to render them susceptible of being

TAKEN ON BY THE BIOPLASMIC MOLECULAR COMPLEX

in which the metabolic action at the foundation of the phenomena of life occurs. In the language of the side-chain theory, bioplasm consists of complex molecules, made up of a functioning centre provided with innumerable arms or side-chains with ends of various configurations adapting them for junction with suitably constructed food-stuff and other molecules. It is within the atomic groupings thus put together that the interactions occur that give rise to oxidation, and thence the development of the various manifestations of energy observed to take place. The theory involves the entry and storage of oxygen in the molecular complex, as well as the oxidisable materials, and as the two become used up, they are replaced by a fresh taking on. With arms having full-up side-chains tacked on, no capacity exists for the taking-on of outside food-stuff molecules, a state of things that may be likened to that which exists in connexion with the chemistry of the inorganic or non-living kingdom of Nature. A compound with its bonds of union in a satisfied state is not in the position for the occurrence of further linking-on, but with free or unsaturated bonds, linkage can occur with anything that is suitably conditioned for being taken on.

Food-stuff molecules, then, require to be incorporated within the bioplasmic molecules of the different components of the body as a preparatory step to subjection to utilisation. What actually takes place after entry into the molecule is, at present, altogether beyond our power of forming a conception. It is evident, however, from the products met with that there must indeed be a very complicated play of changes occurring. Whilst without cognisance of what in detail is going on within, we can nevertheless frame an idea of the general actions taking place by giving attention to the bodies that go in and those that come out. Besides oxidations, hydrolyses, and condensations, the capacity for re-groupings exists, rendering the entry of one body, as for instance a carbohydrate, and the exit of another, as for instance fat, in like manner to what occurs upon a more simple scale in the case of enzyme action, intelligible. Apparently, in

THE FUNCTIONING OF THE MOLECULAR COMPLEX,

side-chains taken on may be afterwards worked off and renewed without the disruption of the centre of the molecule, whilst circumstances may exist to conduct on to the occurrence of a full breaking-down.

The close parallelism that exists between starch and protein in relation to the course of events noticeable in connexion with their application as food principles, is exceedingly striking. They both become hydrolysed and broken down in a corresponding way by enzyme action to fit them for absorption, and for being subsequently taken on by, and incorporated into, the bioplasmic molecule wherein the metabolic actions occur that give issue to the phenomena of life. I think all are now agreed upon the point that entry of the food-stuff molecule, whatever its nature, into the bioplasmic complex is a necessary step towards utilisation, and this being the case, the preliminary procedures in reality merely make provision for the accomplishment of the end to be attained.

The knotty point connected with the subject now presents itself for consideration.

IN WHAT STATE DOES THE FOOD-SUPPLY TRAVEL

from the seat of absorption to that of utilisation in the tissues? I have put the question in a plainly expressed form, and it requires to be frankly met. Under the old view, certainly as regards carbohydrate, the absorbed material was looked upon as being transported through the circulation in an unchanged or free molecular state. I have shown how such a state of things is inconsistent with escape from running off with the urine during the passage of the blood through the kidney, as occurs in connexion with diabetes. Upon the principle of a similar line of action, it has been said of protein, since attention has been given to erepsin, that digestive disruption is carried to the amino-acids, and that it is by the transport of these in a free state through the circulation that the tissues obtain their nitrogenous nutrient supply. If such occurred, the urine ought to reveal it in the same manner as with sugar. We know, when a pathological source for leucine, tyrosine, &c., exists, that they readily enough find their way into the urine, and what is to keep them back if they passed through the circulation for the purpose of transmitting nitrogenous material from the food to the tissues. Even much larger molecular bodies than the amino-acids pass into the urine if they reach the

[2] Zeitschrift für physiologische Chemie, Band xxxiii., p. 451, 1901.

blood, as is exemplified by the occurrence of peptonuria and albumosuria.

Under the view referred to, it has been considered then, alike for protein and carbohydrate, that the food-supply, after being brought by enzyme action into a small molecular state, is in this state conveyed through the circulation to the tissues to be taken in a direct manner on by them, and then utilised. This is tantamount to placing the blood, as far as its office in connexion with food transport is concerned, into the position of an agglomeration of small molecules emanating from food digestion. Why, under these circumstances, should the elaborated protein constituents met with in the blood exist? We have been accustomed to look upon these ingredients as constituting the pabulum from which the tissues draw their nutrient supply, but how does this stand in face of the contention that the food-stuff is conveyed direct to the tissues in the form of broken-down products of digestion?

The subject matter that is before us constitutes a deeply important link in the chain of events connected with the passage of food to utilisation in the body. It also has a collateral bearing in connexion with the urine, inasmuch as the state of the urine is dependent upon the character of the constituents of the blood with respect to molecular size of its ingredients; and through this, the particular form in which the food-stuffs are transmitted from the seat of absorption to that of utilisation in the tissues is brought into relation with the

QUESTION OF LIABILITY TO ESCAPE WITH THE URINE,

in their passage through the kidney, in an unutilised state, or, on the other hand, their non-liability to do so, in which case retention for service in the system, instead of loss, is provided for.

The question of liability or non-liability to escape in the transit of the blood through the kidney is of sufficient importance to lead me to consider it compulsory to give consideration to a view which has been recently broached regarding the state in which the products of food digestion are conveyed through the circulatory system to the tissues. The view, it is true, relates to the protein portion of food, but it being considered that the line of procedure for the carbohydrate portion is of parallel nature to that for the protein, the discussion has a signal bearing on the subject of these lectures.

It was formerly taught that the digestion products issuing from the fatty and albuminous principles of food, reached the circulation through nature's specially constructed channel placed in connexion with the absorbing mechanism of the alimentary canal. Some 30 years ago, a changed idea was put forward upon the strength of experimental results obtained by Schmidt-Mülheim. In the experiments performed, the urinary nitrogen from nitrogenous food was estimated after obstructing the flow of lymph and chyle into the circulation, and compared with the amount found when the connexions between the absorbent and vascular systems were free. It appeared that no essential difference was discernible, and thence it was inferred that protein matter found its way from the alimentary canal into the circulation by passage through the walls of the vessels belonging to the portal system instead of through the thoracic duct.

Notwithstanding the incompatibilities involved in such a view it is surprising the extent to which it became adopted. In face of the settled knowledge possessed regarding the resistance offered to the transmission of proteins through membranes, we find that the portal vessels are freely talked of as constituting the

CHANNEL FOR THE PASSAGE OF PROTEIN EMANATING FROM THE FOOD

into the circulation. Still more strikingly in defiance of reason, we even find, amongst recently recorded work, an observer looking in the mesenteric veins for the lymphocytes emerging from the villi and supposed to pass, as the natural course taken, through the adjoining capillaries into the portal blood! Picture a lymphocyte forcing its way from a lymphoid lacuna through the membranous walls of a capillary, against the blood pressure existing within!

In the case of protein, with equal pressure on both sides of a capillary wall, the conditions are of a nature to prevent the passage of its molecules either way. If this is so with the equal pressure to deal with, is it permissible to conceive that protein can take the course suggested against the blood pressure existing within the vessels? With a reversal of the circumstances, however, the protein molecules can, and do, pass through in compliance with what is observed under ordinary physical conditions to occur. As a matter of fact, under the influence of the blood pressure within the capillaries, protein transudes into the lymph spaces. It does so in proportion to the existing pressure, and leucocytes even do the same, accounting for the migration that is known to occur. Physical laws permit of these procedures, but are altogether opposed to the idea of passage of protein in the reverse direction—namely, from the lymph spaces into the blood-vessels.

Since the discovery of erepsin, the enzyme which has the power of carrying the hydrolysis of the proteins on to the amino-acids, another view has sprung up regarding the procedure by which the proteins are rendered available for appropriation by the tissues. It embodies no less radical an alteration than the

PASSAGE OF PROTEIN IN THE STATE OF BROKEN-UP FRAGMENTS

consisting of amino-acids through the circulation to the tissues. Professor W. D. Halliburton has espoused this view and introduced it into the last edition of his "Handbook of Physiology." It is claimed by him that the proteins become hydrolysed at the seat of absorption into the amino-acids, and that these pass straightway into the blood and thence to the tissues where they become linked on to the tissue molecules and applied to the purposes of life.

Protein is thus assumed to be brought into a smaller molecular state than that of albumose and peptone for transmission through the circulation to the tissues. The conditions are parallel to the transmission of carbohydrate through the circulation in the form of sugar, and what applies to sugar running off with the urine, in proportion as it is present in the blood, will equally apply to the amino-acids. The amino-acids do, as a matter of fact, show themselves in the urine in association with the existence of certain pathological states, so that proof is not wanting that, as might be expected on account of their small molecular size, when they are demonstrably present in the system they become equally so in the urine. The existence of these acids in normal blood and urine constitutes a disputed point, and to overcome the difficulty here arising the convenient assumption is advanced that they are taken by the tissue cells as fast as they can reach the circulation. The same kind of argument has been applied in the case of sugar and we know that it does not here hold good.

In this, as it appears to me, extraordinary contention that the broken-down protein of food is conveyed through the circulation in small molecular fragments to the tissues to be there reconstructed into the specific protein belonging to the animal, the proteins of the blood are left out of consideration altogether, although good grounds exist for looking upon them as a pabulum from which the tissues draw their nutrient supply.

The new position that has been taken by Professor Halliburton contrasts strongly with that which he formerly held. In his "Handbook of Chemical Physiology and Pathology" published in 1891 he says (p. 337): "The increased percentage of proteids in the chyle as compared with the lymph illustrates the fact that the lacteals are not merely concerned in the absorption of fatty, but probably also of albuminous food. In the stomach and intestine the proteins of the food are converted into peptones, substances that diffuse with readiness through living membranes; but no peptones (or proteoses, the intermediate products in the formation of peptones) are found in the chyle; during their passage through the intestinal wall, or immediately on entering the lymph or blood stream, they are reconverted into albumin and globulin." This stands in accord with the view that was at the time generally held. Indeed the only unsettled point then engaging the mind was the question that had been raised by Schmidt-Mülheim's ligature of the thoracic duct experiment which bore upon the path through which the passage of the reconstructed protein took place, in connexion with which Professor Halliburton thus wrote: "Schmidt-Mülheim tied the thoracic duct in dogs and found that proteids were still absorbed; this however does not prove that the lacteals are not normally concerned in the absorption of proteid; it merely shows that animals thus treated can continue to absorb proteid by the other path—the blood-vessels."

Passing now to the last edition of Professor Halliburton's

"Handbook of Physiology" (1907) we find it stated under the head of *Absorption of Proteins* (p. 530):—"The normal course of events is that the food proteins are broken up into their constituent amino-acids, and it is in this form that they are absorbed ..... Not many years ago it was held that proteins were mainly absorbed as peptone, and that the absence of proteoses and peptones in the stream was due to the fact that the intestinal epithelium had the power of re-synthesising the blood proteins from the peptones ..... Recent research has failed to substantiate such views, and the intestinal epithelium does not possess the exclusive power of building up heavy moleculed proteins either from 'peptones' or from amino-acids ..... There is something very attractive in this view, because it affords a rational explanation of why it is that the organism can construct the proteins peculiar to itself and maintain its chemical individuality, although the food taken varies so widely in composition."

What ground is there for this change of opinion? Is there any real justification for it? Recent research, it is said, has failed to substantiate the old view. Has it done anything, it may be asked, to substantiate the new? There is absolutely nothing beyond pure conjecture to deal with, and I protest against the acceptance of any view that implies the passage of nutrient matter through the circulation in a form to be susceptible of filtering off with the urine. Nature does not operate in such a defective way, and food put into a small molecular state for transit through the system could not be prevented, to a greater or less extent, from passing off as waste material with the urine.

Professor Halliburton seems to have been influenced by the attractiveness of the success that has attended Emil Fischer's

EFFORTS TO SYNTHESISE AMINO-ACIDS

into poly-peptides, which may be spoken of as the lower grades of protein. Because the chemist, however, can only, as yet, synthesise members of the amino-acid group of cleavage products of proteolysis into higher combinations, it is not to be argued that Nature is in the same position. In our laboratory procedures we lack the power of forging the implements that Nature in her building-up and breaking-down operations works with. When we get hold of and employ these implements—as, for instance, when we operate with enzymes—we can achieve in our laboratory experiments the same that is effected within the living organism.

It may be taken that chemistry works upon the same lines inside and outside living matter. Affinity and adaptability in molecular configuration are at the root of chemical union. If molecules are not of suitable configuration for linkage together, no chemical union can occur. It is intelligible that with molecules of simple construction adaptability for union rests upon a less complicated basis than with molecules of a complex nature. Thus, with the more simple molecules the required conditions for union may be susceptible of being found and supplied, whilst in the case of the more complicated ones our efforts may prove altogether fruitless. A complicated lock is as easily opened as a simple one if a right-fitting key is at hand for the purpose. Here lies the pith of the matter. There is far more difficulty in meeting with the right key for the complicated than there is for the simple lock.

If peptone as a product of proteolysis can be taken on, through the agency of the enzyme concerned in the synthetic operation, by the molecular complex of the living cell, there is no need for proteolysis to proceed further. Nature, with her enzyme, may be able to provide the requisite adaptability for union, whilst the laboratory worker, unsupplied with the enzyme, may be unable to do so. Working, however, with a more simple form of molecule, it is only natural to conclude that a greater possibility of success may present itself. It is only in this way, as far as I can see, that advantage is likely to be derivable from a more complete proteolysis. What is wanted to be attained is that the protein food molecule should be broken down into fragments that are susceptible of being re-synthesised into the reconstructed protein entering into the constitution of the organism that receives the food.

The all-important point connected with this matter is the

SEAT AT WHICH THE RECONSTRUCTION OF THE BROKEN-DOWN FOOD MOLECULE OCCURS.

Professor Halliburton says that the reconstruction takes place in the tissue cells, the fragments from the food proteolysis being conveyed thither by the blood in the form of amino-acid molecules. I have upon many occasions referred to the effect of the transmission of small molecular bodies through the circulation in relation to the urine, and I hold that their entry into the blood is attended with their appearance in the urine, so that alike for sugar and for the amino-acids, appeal may be made to the urine to afford an indication of what stands good in connexion with the blood. No one disputes that a re-synthesis of the products of proteolysis occurs. The point is, Does it occur at the seat of absorption or does it occur in the tissues? In the first case, the re-united cleavage products reach the blood in the form of protein which escapes from passing into the urine. In the second, the passage of the disjoined products to the tissues ought to be made manifest through the medium of the urine.

Professor Halliburton reproves Abderhalden, a distinguished worker in association with Emil Fischer on the proteins, for not coinciding with him in the view that has been set forth, and for advocating instead, in a recently published paper, the view antecedently entertained that the products of protein cleavage are re-synthesised in the intestinal wall. In his "Annual Report on Physiological Chemistry for 1907," issued by the Chemical Society, the following words are, at p. 235, to be found: "Abderhalden's reactionary conclusion on the matter shows a lack of the acumen which is usually noticeable in his writings." Is it not possible that opinions may differ as to the side on which the lack of acumen lies?

I will now proceed to show that if we look broadly into the matter, tangible evidence can be adduced to show that production of protein must take place in connexion with food absorption at the actual seat of its occurrence in the walls of the alimentary canal. Persons seem, upon the point before us, to have been led away by narrow experimental considerations and to have overlooked the broad facts that confront us. No one can dispute that

A FLOW OF CHYLE TAKES PLACE

through the thoracic duct into the circulatory system concurrently with the digestion and absorption of food. Now, what does the flow that thus takes place imply? Let us see the nature of the answer to be given to the question.

Anatomy teaches us that the absorbent system consists of an elaborate set of vessels dispersed throughout all the tissues within the body. Starting from the lacunæ or spaces intervening between the capillaries of the vascular system and the tissue elements, the vessels join in a complicated manner and proceed to each side of the lower part of the neck where they discharge their contents into vessels belonging to the venous system. One office of the absorbent system may be stated to be to convey back into the blood-vessels materials which have escaped from the blood capillaries and have not been made use of by the tissues. The escape from the capillaries is found to fluctuate with the amount of blood pressure in them. In a state of rest, the pressure may be such as to lead to only an insignificant transudation occurring. As the pressure rises, both quantity and quality of the exudate, or lymph, become altered. The quantity is increased, and protein bodies, which in the absence of hydrostatic pressure are not transmissible through membranes, find their way, in proportion to the existing pressure, through the walls of the vessels into the lymph spaces. The lymph which occupies the interstitial spaces between the blood vessels and the tissue elements thus constitutes an exudate from the blood plasma varying in amount and character in an automatic manner according to the requirements of nutrition, for the conditions—tissue exercise, gland flow, &c.—which create an increased demand for nutrient supply, at the same time give birth to an increased capillary fulness involving increased capillary blood pressure.

The view that is here shaped into words represents that which is generally entertained, and it adequately serves to meet the facts that confront us in connexion with the matter. To the view that lymph production is the result of a secretory action of the endothelial cells of the capillary vessels, I give no credence. I am no believer in chemical and physical laws being set at naught in living beings and superseded by a mysterious supernatural "vital" agency, which, in the case before us, would lead up to exceedingly delicate and simply protective epithelial cells having a secreting function thrown upon them, and being employed in work which it is irrational to conceive could be accomplished

by them. No doubt, in connexion with life, there is a power in operation of a determining or regulating nature, which leads to the performance of operations which cannot spring from mere chemistry and physics, but observation teaches us that this power manifests itself upon matter through the instrumentality of chemical and physical actions.

The absorbent system may be considered to pick up the unappropriated material which has escaped from the blood vessels for the purpose of tissue nutrition, and to convey it back in the form of lymph to the circulatory system. At a period of fasting, such is the nature of the fluid present in all parts of the absorbent system. At a period of digestion, however, the absorbents belonging to the alimentary canal become charged with products derived from the food, which thus supplement the contents that are ordinarily present, and far outweigh them in quantity and significance. We have, then, a product of absorption from the food, which visibly presents itself to our notice, and naturally passes into the blood stream through the thoracic duct.

Let us pursue this matter further and see how the evidence stands bearing on the

PASSAGE OF RECONSTRUCTED PROTEIN FROM FOOD INTO THE CIRCULATORY SYSTEM.

There is no question about the contents of the thoracic duct flowing into the blood stream. What do these contents consist of? At one time, lymph, and at another time, chyle: the former, representing the unutilised exudate from the blood for the nutrition of the tissues, and the latter, this exudate plus material derived from the food. Seeing that the exudate is likely to be, and, as a matter of fact is, very variable in quantity consequent upon the extent to which it is influenced by varying conditions, and that the food item is of a variable nature, it is not surprising to find that much difference exists in the estimates given of the amount of lymph and chyle flowing into the blood.

Amongst text-book authorities, Michael Foster speaks of its having been calculated that in a well-fed animal, a quantity of lymph and chyle equal to that of the whole blood may pass through the thoracic duct in 24 hours, and that of this, about half comes through the lacteals from the abdominal viscera, and therefore to a large extent from food. Upon this basis he reckons that for a man of average weight the quantity discharged into the blood per hour would be a quarter of a kilogramme, or a little under a quarter of a litre, a ratio giving something less than six litres for the 24 hours.

It is a matter that is beset with difficulties to obtain precise information experimentally regarding the rate of flow taking place under natural conditions. Hence many widely conflicting statements have been made by different authorities. Cases are from time to time come across in the human subject where from some unnatural condition connected with the thoracic duct an obstruction is offered to the flow of chyle in its proper direction and it becomes discharged from the lymphatics belonging to a particular portion of the skin.

One such case has recently formed the subject of a communication from the physiological laboratory of University College, London, by J. Molyneux Hamill in the *Journal of Physiology*, Vol. XXXV., 1906. The patient, who was an inmate in University College Hospital, was a man in a fairly healthy state, 20 years of age, and 140 pounds in weight. When a boy of 10 years, the cutaneous lymphatic distension showed itself and led on to the formation of a permanent fistulous opening in the upper part of the right thigh close against the groin. Through this opening lymph and chyle, when not controlled by a pad and bandage, escaped. When escape was prevented, accumulation took place in the affected parts and led on to a state of tension which required to be from day to day relieved by allowing a certain amount of exit to take place. An observation was conducted on

THE RATE OF CHYLE FLOW

by leaving the opening free and allowing the chyle to trickle into a vessel placed to receive it. In this way, over four litres, it is stated, were collected in the course of 12 hours. Further escape was then stopped at the patient's request owing to the great exhaustion it produced. It is seen that the rate of flow was here greater than in the estimate given by Michael Foster. At the same time, however, the collected fluid, it is to be remarked, was considerably more watery than lymph and chyle collected in a direct manner.

Whatever may be the exact volume of liquid flowing from the absorbent into the vascular system, it is evident that it is one of considerable magnitude, and upon this point there is no need here to say more. In pursuing the train of reasoning in hand, I will pass to the consideration of the component nature of the current that flows into the blood. It is closely allied in constitution to the blood itself, and may, in fact, be said to represent rudimentary blood, minus the red corpuscular element. Fat in suspension is present as a collateral ingredient when absorption of fat has taken place from the alimentary canal. This principle, not being mixed up with the point before us, need not be further alluded to. The point of special concern is the presence of lymphocytes, as in blood, and of protein matter precisely under the forms met with in the blood—viz., as albumin, globulin and fibrinogen.

Professor Halliburton in his "Handbook of Chemical Physiology and Pathology," 1891, p. 331, speaking of lymph plasma says: "It may be briefly described as diluted blood plasma." With respect to distinction between lymph plasma and chyle plasma, it is generally admitted that the latter contains a larger percentage of protein than the former, and this falls in accord with the view expressed by Professor Halliburton in the quotation a short time back given from p. 337 of the work I have just referred to.

The flow from the absorbent system, then, carries

PROTEIN MATTER, THAT BECOMES BLOOD PROTEIN,

in company with lymphocytes into the blood stream. I consider it is not justifiable to conceive that the exudate from the blood into the lymph spaces is at all comparable to the product which passes from the absorbent system into the veins. An opportunity is afforded of seeing the comparatively watery character of the lymph space fluid when the quantity is preternaturally augmented as in dropsical conditions, and here, on account of the increased blood pressure in operation, the circumstances are such as even to promote more transudation of protein matter from the blood than is occurring naturally.

The conclusion to be drawn is that protein becomes developed within the absorbent system, and we have an elaborating agency present that suffices to accomplish the work. The lymphocytes represent bioplasmic growth, and it is the property of growing bioplasm to link on molecules of suitable configuration from around it and incorporate them into its substance. It may be reasonably conjectured that the plasmic material not appropriated by the tissues becomes taken up by the lymphocytes, and, in a re-elaborated state, thence restored to the circulation.

Such is what may be said regarding recovery and restoration to the blood, in protein form, of transuded and unapplied nutrient material. Let us next look at what occurs in connexion with the transport of food. It is beyond dispute that food protein is, in the first place, broken down and placed in a position to be capable of diffusing through the innermost layer of the intestinal canal into the subjacent lymph spaces. This is all that is here wanted, and, as far as the process in question is concerned, it is immaterial whether the breaking down stops, as has hitherto been believed, at peptone, or whether it passes on to the amino-acids. For the next step, a necessary condition is that the molecules produced should be susceptible of being taken on by the growing bioplasm with which they come into relation. If this condition is complied with, all that is wanted is here again, at this further stage, supplied.

Let it be supposed that food protein has been broken down and put into a diffusible condition, and that the molecules produced possess the requisite configuration to adapt them for being taken on by the molecules of bioplasm, within the reach of which they may happen to fall. What, it may be asked, next occurs? The view formerly held and systematically taught was that

A RE-SYNTHESIS INTO PROTEIN

was effected by the epithelial cells of the intestine, and that the regenerated protein, in some inexplicable way, made its escape from the cells, and then, upon the strength of the notion started by Schmidt-Mülheim's experiments and in opposition to recognised physical laws, reached the circulation by direct transmission through the walls of the capillaries of the portal system.

Now, besides the bioplasm belonging to the epithelial cells, there is another form of bioplasm present in close

vicinity of the cells, namely, that of the lymphocytes existing in the lymph spaces, and there cannot be a doubt, in view of the known facts connected with these bodies, that they play a most important part in connexion with the synthetic reconstruction of the absorbed digestion products.

It is to be said of these lymphocytes that they are actively growing and proliferating bodies, particularly so when food is being absorbed. Kölliker, as far back as the middle of the last century, drew attention to the parenchyma of the villi being densely filled with them whilst digestion is going on, and remarked that, whilst never absent, they are, at other times, far fewer. It is only in connexion with the small intestinal part of the alimentary canal that this special development of lymphocytes is noticeable. Both in the case of the stomach and of the large intestine, a widely marked difference is observable, there being in these latter portions of the canal no more lymphocytes visible than may be seen in connexion with tissues generally.

A special lymphocyte growth, then, occurs in the villi in association with the absorption of the products of digestion from the intestinal canal. In my work on "Carbohydrate Metabolism and Diabetes," 1906, I entered fully into this subject in relation to the assimilation of carbohydrate by being embodied into protein, and gave photo-micrographic representations in illustration of the conditions observable. What was said in regard to carbohydrate equally applies to the nitrogenous part of the broken-down protein. They both disappear at the seat of absorption, and, accompanying their disappearance, there is an indisputable extensive

GENESIS OF PROTEIN THROUGH THE MEDIUM OF THE LYMPHOCYTE

formation that takes place.

With respect to mode of growth, lymphocytes may be looked upon as standing in the same position as unicellular organisms in a culture pabulum. The growth involves construction of protein out of surrounding more elementary principles. This constitutes an operation of universal occurrence in connexion with all living matter, seeing that protein is the constitutional basis of living matter, and that growth of living matter is attended with its formation. The construction of protein therefore runs concurrently with the growth of living matter, and, in the case of the intestinal lymphocytes, observation shows that the food-supply is at the foundation of their activity of growth.

Just as bacteria grow in a culture medium, so, it may be considered, do the intestinal lymphocytes grow upon the products of digestion that have passed by diffusion into the lymph spaces of villi. Anyone can satisfy himself of the influence exerted by food absorption on the state of the villi in relation to lymphocyte growth. If a rabbit, for instance, be killed at a period of full fasting, nothing is to be seen of lacteal vessels upon the intestine, and the receptaculum chyli even may not be susceptible of being discerned. The lacteal system seems to be in a state of quiescence, and to all appearances there cannot be any material flow of fluid taking place through the vessels. Killed at a period of full digestion, the contrast in appearance is very great. The lacteals are to be seen ramifying in a most conspicuous manner upon the surface of the intestine, the vessels that course through the mesentery stand out boldly as visible objects, and the receptaculum chyli is easily recognisable through the medium of its fluid contents. There cannot be the slightest question about an active flow of chyle taking place through the lacteal into the vascular system at a period of digestion, and if this is the case, does it not necessarily imply a corresponding transmission of protein, emanating from the food, into the blood?

The plasma of lymph and chyle is known to contain identically the same protein principles as the plasma of the blood. It is only in amount that a difference exists, and it is generally considered that the protein content of chyle plasma may be put down as being ordinarily equal to about half of that of the blood, or somewhere about 3·5 to 4 per cent., and that of lymph plasma to something less. I think it cannot be otherwise than conceded that the outflowing lymph and chyle derive their characters from within the absorbent system, and the lymphocytes may be regarded as constituting the source of the proteins met with. It is evident that these proteins cannot arise from self-production, but must be preceded by bioplasm, and be constructed by its synthesising agency. No other conclusion is permissible, and in the lymphocytes and their environment, the conditions exist for supplying what is wanted.

LYMPHOCYTE AUTOLYSIS

completes the process, and it may be reasonably concluded that this autolysis is not confined to lymphocytes that have entered the blood, but may also ensue antecedently to the blood being reached.

What I want to urge is that the reconstructed protein from the digestion products is formed at the seat of absorption and flows into the blood through the thoracic duct, instead of the digestion products being conveyed as such through the circulatory system to the tissues and there re-synthesised. It appears to me, if such a procedure as the latter actually occurred, it could not escape being revealed, as already insisted upon, alike in the case of carbohydrate and protein, by the state of the urine, upon the principle founded on observation that small molecular bodies, such as digestion products consist of, if permitted to reach the blood, find their way into the urine.

Under the view adopted, the blood is maintained in a renovated state by a supply of elaborated material thrown into it from the absorbent system, and derived in part from the food, and in part from the unutilised portion of the blood plasma which has escaped from the capillaries into the lymph spaces for the service of the tissues and subsequently become worked up by lymphocyte growth into the specific protein principles that flow into the blood.

With these circumstances confronting us, I do not see how the direct transmission of the digestion products from the food into the blood can be contended for, and the part played by the lacteal system in relation thereto, ignored. If anything at all approaching the quantity of chyle that is supposed to flow through the thoracic duct reaches the blood, the amount of protein passing with it must be something very considerable, and at the same time adequate to meet the required conditions belonging to tissue demand and food supply.

There are two forms in which protein passes into the blood—in the form of plasma protein, and in the form of lymphocytes. What is observed in connexion with

DIGESTION LYMPHOCYTOSIS

gives an idea of the extent of transmission of protein in the form of lymphocytes. Gulland, who has identified himself with the subject of blood counts, says that the lymphocytes show a continuous rise in number up to about the fourth or fifth hour after the ingestion of food, and that the total number per cubic millimetre of blood had often been found to be increased from 3000 up to 11,000 in the course of an hour. He also speaks of a fall in number being afterwards almost as rapid. I read the fall as constituting the result of autolysis, by the instrumentality of which the newly formed bioplasm becomes resolved into the protein constituents of the blood.

Cases have occurred in which, through injury to the thoracic duct, its contents have escaped, instead of flowing into the blood, and the effects observed have coincided with what might be looked for under the view that the nutrient supply from the food reaches the system in the manner contended for. A striking case of the kind is reported by Mr. R. T. H. Bucknall of University College Hospital, in the second volume of the *British Medical Journal* for 1905, p. 809. The patient was operated on for the removal of some tuberculous glands at the root of the neck. The thoracic duct was accidentally severed in the performance of the operation, without its being at first known that such had occurred. Instead of making favourable progress afterwards, great weakness, it is stated, was complained of, and, at the end of 24 hours, we are told the patient sank back in bed apparently very exhausted. It was then noticed that the dressing was soaked with a large quantity of clear yellowish fluid, and, on exploration, similar fluid was seen to be oozing rapidly from the wound. The wound was plugged, but the plugging proved of no avail, and from two to three pints of fluid leaked away every day, at times slowly, and at times more rapidly, clear and thin on the whole, but definitely chylous after meals. The patient, it is next said, lost strength in a remarkable manner and grew visibly thinner, so much so that it was obviously imperative to check any further leakage without delay. This was successfully accomplished by ligaturing the ends of the divided

duct, after which, the account runs, the patient at once recovered his strength and spirits, and put on weight.

I think sufficient has been said to render it evident that, notwithstanding any conception to the contrary, the

THORACIC DUCT CONSTITUTES THE CHANNEL

through which the blood is maintained in a replenished condition by the agency of food. We are faced with the recognisable fact that, concomitantly with the absorption of food, there is a concordant flow of protein, partly in the form of lymphocytes, and partly in the form of plasma constituents, into the blood.

An underrated estimate, it must be mentioned, prevails in the minds of many with respect to the number of lymphocytes present in chyle. It is not uncommon for them to be looked upon as though they were devoid of significance, and, as I have mentioned elsewhere, this is probably attributable to a faulty method of manipulative procedure. It has to be borne in mind that they become entangled in the fibrinous coagulum, and to look for them in the serous liquid is tantamount to looking for blood corpuscles in blood serum. To obtain a correct representation, it is necessary to prevent the chyle from coagulating by means of an agent like the citrate of potash. Thus treated, and examined microscopically, the lymphocytes are seen to be as closely congregated on the slide as red corpuscles on a blood film slide. Photomicrographs showing the appearance presented are given in my work on "Carbohydrate Metabolism and Diabetes."

Growth and proliferation may be regarded as the attributes of lymphocytes, and growth means the building up of protein out of more elementary material. The life-history of phagocytes is comparable to that of lymphocytes as far as incorporating power is concerned. In the case of the former, however, the material incorporated is of a grosser nature than in the case of the latter, micro-organisms and other discernible particles of matter being appropriated by them. Having played their part of converting inert matter into living protoplasm, they, lymphocytes and leucocytes alike, melt down and disappear, and in this process the protein that has been built up is set free. Lymphocytolysis and leucocytolysis are processes of admitted occurrence. Just as there are agencies leading to building up, so there are agencies, lysins, leading to breaking down.

Leucocytolysis stands upon the same footing as hæmolysis and bacteriolysis. We are in possession of established knowledge with regard to the mechanism of the two latter processes, and leucocytolysis falls into line with them. Metchnikoff has found that by the agency of the injection of lymphocytes from a lymphatic gland of a rabbit into a guinea-pig, the serum of the guinea-pig's blood acquires the power of quickly dissolving rabbit's leucocytes, no matter what the type of leucocyte present. Evidence is thus afforded that leucocytes are actually susceptible of melting down, and in the melting down, the protein that has been generated within them passes, it may be reasonably concluded, into a state of solution under the form of the

ALBUMIN, GLOBULIN, AND FIBRINOGEN

appertaining to the plasma. Seeing, it may further be said, that the proteins of the lymph and chyle are identical with those of the blood, it is not irrational to conclude that the autolysis spoken of may in part occur before the lymphocytes quit the absorbent system. In this manner the genesis of the proteins in question is traceable throughout to a kindred source.

What has been said with reference to lymphocytolysis is supported by what may be seen to take place in the lymphocytes contained in chyle collected from the receptaculum chyli and afterwards kept for a day or two. I have some stained slides, prepared in the same way as for dry blood films, representing the condition observable shortly after collection and at subsequent periods. Taken on the first day, nothing beyond the ordinary character belonging to the lymphocyte is seen. After keeping the chyle in a small bottle till the following day, and then preparing the slide, the preparation shows that a number of large, round, very faintly stained, nebular bodies had become apparent, and with a specimen that had been kept for another day, these ghost-like bodies are seen to have become larger and still more nebular, and to have scarcely taken any stain at all. They give the idea of consisting of lymphocytes in a state of dissolution, and interspersed amongst them unchanged lymphocytes are to be seen. Mr. S. G. Shattock, to whom I have submitted the slides, concurs with this view, and if it is accepted, direct evidence is supplied of the occurrence of autolytic action outside the body. Taking it that autolysis occurs, the built-up protein cannot vanish into nothing. The only legitimate conclusion, as far as I can see, is that it becomes resolved into the proteins of the plasma.

We have now to consider what subsequently happens. The broken-down products of food digestion having been re-synthesised (assimilated) at the seat of absorption by lymphocyte growth, and the lymphocytes having been resolved by autolysis into the proteins of the blood, the transmuted food is brought within reach of the tissue cells wherein utilisation occurs. The proteins of the blood, with their large complex molecules, thus become the

PABULUM FROM WHICH THE TISSUES DRAW THEIR SUPPLY,

according to the particular need existing.

If attention is given, it will be noticed that the state of things depicted is identical with that existing in the incubating egg. Do we here find the growing tissues of the chick drawing their supply from a collection of small molecular, broken-down products, as, it has been suggested, the food is converted into for the tissue supply of the developed animal? No, the material provided by Nature for tissue growth and service in connexion with incubation is comparable in character to the protein constituents of the blood.

Having followed the food to the protein constituents of the blood, the point now before us is to inquire into what next occurs. Utilisation in growth, in maintenance, and in energy production are the ends to be reached. For this to be carried out, incorporation with the bioplasmic molecule is necessary. In what precise way, it may be asked, does this incorporation take place? Do the protein molecules as such become linked on to the living cell molecules, or does any preliminary breaking-down action occur?

In the case of the vegetable kingdom, distinct evidence is before us of the occurrence of breaking down by enzyme action preparatory to utilisation. Take, for example, what is observable in the germinating tuber and seed. The store of starch lying within the range of influence of the germinating material becomes broken down into sugar before it is made use of. Again, in connexion with the operations taking place in the life-history of yeast, we know that a sugar, saccharose, which is not susceptible of being turned to account whilst existing as such, is rendered serviceable by the instrumentality of an enzyme, invertase, produced by the yeast, which splits the saccharose up into dextrose and levulose.

The side-chain theory bearing on immunity, &c., also brings in the taking-on of nutrient matter by the bioplasmic molecule, and something allied, as will be later seen, to what has just been mentioned with regard to molecular breaking down, is comprehended in the theory. The theory stands in conformity with the accepted doctrine applying to the dominating factors regulating ordinary chemical action. Affinity and suitable molecular configuration are conjointly at the foundation of chemical union. Let it be supposed that atoms have been joined by a strong bond of union into a group classified as a ring or nucleus. To any member of the group having a free or unsaturated bond, suitable atoms or molecules can be

LINKED ON IN THE FORM OF A SIDE-CHAIN,

which can not only be subsequently removed, but likewise replaced by another, without disturbing the integrity of the original group.

Now, a bioplasmic molecule is viewed as constituting a large and complex molecule, consisting of a nucleus or functioning centre, around which are innumerable arms or side-chains equipped with endings capable of taking on molecules or groups of molecules that are similarly provided with suitably adapted side-chain endings. There must be adaptability between the ending that takes on and that which is taken on, and it is conjectured that an infinite variety of endings exists, so as to make provision for the attachment of the diversity of groupings that become affixed. When linked on, a mutual interchange of influence occurs between the centre and the side-chain groups. At the same time, however, the latter can seemingly be used up or worked off, whilst the former is left intact. It is in this molecular complex that the various chemical changes occur which give

rise to the diverse manifestations of life that present themselves to our notice. That a linked-on group can affect and upset the proceedings within the molecular complex is shown by the effect produced when a toxin molecule is taken on.

In the natural course of events, the receptors or arms are designed for taking on nutrient molecules of various kinds, and amongst these, protein molecules are included. Upon this point Ehrlich, in his Royal Society Croonian lecture, says: "If a cell of the organism has, with the assistance of an appropriate 'side-chain,' fixed to itself a giant molecule, there is provided one of the conditions essential for the cell nourishment. Such giant molecules cannot at first be utilised by the cells, and are only made available when, by means of a ferment-like process, they are split into smaller fragments. This will be very effectually attained if, figuratively speaking, the 'tentacle' or grappling arm of the protoplasm possesses a second haptophore group adapted to take to itself ferment-like material out of the blood fluid."

What is here meant is that the receptor or side-chain is not only provided with an ending for taking on the protein nutrient molecule, but in addition, another ending constructed for taking on a particular molecular group to which the name of complement is assigned in the nomenclature adopted. This body is regarded as possessing ferment-like properties, and as existing in a free state in the blood serum, so as to be ready for anchorage wherever a suitable molecular group ending is to be found. It is supposed to stand in the same position towards the nutrient molecule as the lysin complement does to the red blood corpuscle, action occurring through the amboceptor which links both together; and, like the lysin complement, it loses its activity, as a ferment does, by exposure to a temperature of about 55° C.

To briefly recapitulate,

THE VIEW THAT HAS BEEN FORMULATED

may be thus summarised. Food that has been broken down and placed in a fit state by digestion for absorption is at once dealt with at the seat of absorption, and rebuilt into an elaborated form. Dextrose and peptone are alike recognisable at the seat of absorption, but both thereafter disappear. At the same time, and at the same spot, there is an active bioplasmic growth taking place, and bioplasm is known to feed upon dextrose and upon peptone. The lymphocytes, which constitute the growing material, can be followed from the villi into the absorbent vessels, and thence through the thoracic duct into the vascular system. Concurrently and harmoniously with what has been represented, from the absorbent system aspect of the question, to occur, observation upon the blood has shown that during the digestion period there is so large an accession of lymphocytes as to have given origin to the application of the term digestion lymphocytosis to it.

The next event in the life-history of the lymphocyte is lymphocytolysis. There can be no doubt that production and disappearance constitute a routine procedure, and there are good grounds for inferring that the disappearance is attended with a melting down, and transformation into the protein constituents of chyle and blood plasma, thus bringing these principles, which we are accustomed to view as tissue pabulum, into direct relation with the food, and placing them, in fact, in the position of elaborated food.

Looked at in this way, the tissues draw their nutrient supply from material elaborated from the digestion products at the seat of absorption, instead of the digestion products being conveyed as such through the circulatory system to the tissues, an event that, on account of their small molecular nature should but does not, make itself evident to us by running off with the urine. Under the view advocated, the mode of tissue nourishment is brought into parallelism with what occurs in the incubation of the egg, for here it is noticeable that the nutrient supply exists under the form of elaborated material of a similar nature to that belonging to the blood.

It is not permissible to assume that all the protein that is formed enters as a component of the tissues before being broken down. It is known that the

UNUTILISABLE NITROGEN PASSES OUT OF THE BODY IN THE FORM OF UREA,

and it is also known that the urea eliminated stands proportionate to the protein matter ingested, instead of to the energy produced in the tissues. This being the case, protein breaking down must occur, with separation of the non-utilisable from the utilisable portion, independently of what occurs in association with energy production. To enter the tissue simply for the purpose of being broken down and giving off its unutilisable nitrogenous portion is an unlikely mode of procedure. Whilst within the lymphocyte, however, the process may very consistently take place through the instrumentality of intracellular enzyme action, and this view of the matter harmonises with the fact that the period at which the increased elimination of urea shows itself after the taking of food, about corresponds with that of maximum activity of lymphocyte autolysis.

The great point emanating from what has preceded is that the products of digestion become assimilated at the seat of absorption. By this assimilation they become rebuilt, before reaching the circulation, into molecules of sufficient size to be precluded from flowing off with the urine in their passage through the kidney, in contra-distinction to what is known to occur with the digestion products themselves when circumstances exist to lead to their demonstrable presence in the blood. All experimental work affords testimony of sugar standing in the same position as salines and urea in relation to the property of passing off with the urine.

Impermeability of the kidney to sugar is, as I have before stated, a pure

FICTION RAISED UPON THE FALSE CONCEPTION

of healthy urine being free from sugar. Facts show that the urine, indeed, stands in very sensitive relationship to the blood with respect to sugar. The behaviour of Fehling's solution may be considered to be answerable for having led to the error that has existed. It is now well understood that, whilst Fehling's solution is a test of extreme delicacy for sugar when in a pure state, the constituents belonging to the urine mask the reaction when the sugar is present in urine in small quantities only. After a long and hard struggle, the existence of sugar in healthy urine has come to be admitted, but a disposition to minimise its significance to the utmost possible extent is still noticeable.

The misconception that has so long prevailed has operated as a misguiding factor in connexion with the fundamental idea belonging to the glycogenic theory that the carbohydrate of our food is destined to pass through the circulatory system to the tissues in the form of sugar. In Michael Foster's textbook on "Physiology," at p. 613, we find it stated: "Now, a small amount of sugar is normally present in the blood, and *so long as this normal amount is not exceeded no sugar appears in the urine* [the italics are mine]. If, however, by some reason or other, the sugar in the blood is increased beyond that normal amount, the excess passes unchanged into the urine. And, the excess in the blood which thus leads to the excretion of unchanged sugar, is so small that we might expect it to be oxidised in the blood did the blood possess any considerable oxidising power." The identity of the idea here expressed with that expressed in the quotation from the author of the article in Hill's "Recent Advances in Physiology and Biochemistry" given in Lecture I., shows how deeply the groundless idea has become rooted in the minds of physiologists.

The misleading nature, upon a vital point, of such a conception cannot be otherwise than obvious to everyone. It implies, contrary to fact, that sugar may reach the blood of the general circulation without its presence being revealed by the urine. The real circumstances are that the urine constitutes an indicator of the state of the blood with respect to sugar, no matter whether the amount existing be large or small, and thence it may be concluded that if sugar were reaching the circulation, as is contended for under the glycogenic theory, it could not escape being rendered evident by the urine, just as indeed happens in connexion with diabetes.

THE WARR MEMORIAL AT THE LIVERPOOL ROYAL INFIRMARY.—The committee in charge of the fund raised as a memorial to the late Mr. Augustus F. Warr (formerly M.P. for one of the Liverpool divisions, and a member of the committee of the Liverpool Royal Infirmary) has announced that the sum of £4650 has been subscribed. Out of this amount the sum of £500 is to be offered to the committee of the Royal Infirmary towards the endowment of a bed to be associated permanently with Mr. Warr's name.

THE "EFFECTIVE PERIODS" OF TYPHOID "CARRIERS."*

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IN a previous communication[1] we intimated our intention to continue observations upon the typhoid "carrier" whose case we described. Since then we have traced another outbreak to a typhoid carrier and have prosecuted inquiries from several standpoints in order to determine certain factors associated with the transmission of the organism. One of these is connected with the "effective" periods of the carrier, and although the facts already ascertained are limited to few cases we consider that their publication may call further attention to the whole question of typhoid carriers and so indirectly furnish additional material for investigation.

It may be remembered that Mrs. H., the subject of our earlier paper, was found to be the cause of three outbreaks of enteric fever in institutions where she was acting as cook. In November, 1907, she was proved to be a typhoid carrier, and her removal from any contact with food resulted in the disappearance of enteric fever from the institution where she was working. From that time we have had her under strict control, her fæces have been examined frequently, and her clinical condition has been duly noted. In addition to the bacteriological examination of the fæces attention has been paid to the character of the stools, and in Chart 1 these are described as formed, disturbed, diarrhœic. There appears to be some relationship between the unformed stools and the presence of bacillus typhosus in the fæces.

On Dec. 20th, 1907, typhoid bacilli were obtained from the fæces. Negative results were then the rule until the following April 14th, when a luxuriant growth of bacillus typhosus appeared on the plates. Further daily examinations showed the organisms to be present on May 11th, 21st, and 29th, and on June 10th. The urine did not contain the bacillus typhosus. About May 21st Mrs. H. fell ill. The pulse-rate was 120, the temperature was 100° F., and she presented a "typhoid" appearance. Chart 1 gives the temperature and pulse curves. Differential blood counts showed an increase of mononuclear cells—35 to 50 per cent. Unfortunately, at the time it was impossible to arrange for a count of the total number of white cells. Her blood gave a good and prompt agglutination, 1 in 25, but was negative in higher dilutions. With a view to the consideration of other causes the blood was examined bacteriologically. No organisms were present. Her opsonic index was then determined for staphylococci, streptococci, bacillus coli communis, and bacillus typhosus. This was carried out by the opsonic assistant at the Bristol Royal Infirmary, Dr. J. M. H. Munro, to whom we are much indebted. The result was as follows: staphylococci, 0·99; streptococci, 1·07; bacillus coli communis, 1·2; and bacillus typhosus, 1·7. Minute examinations of the fæces failed to reveal any gall-stone, and there were no clinical signs of biliary obstruction.[2] We concluded that the patient was probably suffering from a self-inflicted attack of enteric fever, although we recognise that the attack may have been a cholecystitis, or some form of enteritis. The associated presence of bacillus typhosus in the stools led us to regard it as probably a typhoid enteritis. The duration of the illness was about three weeks.

Since this "carrier" was removed from her position in the dairy in November last she has lived in a separate block with some typhoid convalescents. In July, 1908, a woman with whom she had been daily closely associated for some months was attacked with typhoid fever. It was found that after the carrier had eaten as much as she could of her lunch she handed the remainder to her companion. This suggested a probable means of infection and an endeavour was made to find bacilli on the hands of the carrier after defæcation and before ablution. The investigation is still in progress. Up to the present only cocci, moulds, and motile bacilli have been isolated. No bacillus coli communis or typhoid bacilli have been found. The carrier, however, now endeavours to prevent any soiling of the skin after defæcation, &c. It may be possible to obtain positive results from other carriers before they alter their usual habits.

Second carrier case.—Before considering the question of "periodicity" and "effective periods" we may perhaps mention the details of another case we have met with. In September, 1907, J. H—n had enteric fever and died His wife, who had nursed him prior to his removal to hospital, had a slight attack of enteric fever in October–November, 1907. After recovery she continued her household duties. All went well until June 6th when her four children were simultaneously attacked with enteric fever. In the absence of any other cause the woman herself fell under suspicion, and it was found that her blood agglutinated bacillus typhosus 1 in 200. On several subsequent occasions the Widal reaction has been obtained in similar dilutions. The fæces are being repeatedly examined from the standpoint of "periodicity."

The May period of infectivity.—We have already pointed out that Mrs. H. was responsible for three outbreaks. In May, 1904, she was at a home for girls, Brislington, where 25 cases of typhoid fever and two deaths occurred. In May, 1905, she was at a girls' home in Clifton, where typhoid fever broke out. In May, 1907, the second and larger group of Brentry cases commenced. At all these places she was present for some time before any typhoid fever appeared. January, February, and March were the months during which she was "ineffective." This year (1908) her isolation has prevented any wide transmission of the organisms, but, curiously enough, she appears to have infected herself about the same time of the year—viz., May—and a single fellow inmate in July. The fæces examined in January, February, and March did not contain typhoid bacilli. In Chart 2 we show these periods. The time during which she was in a position to infect food is shown by a thin line and it will be seen that it was not until May that she became "effective," while, under favourable circumstances, her effectiveness then continued to the end of the year. In the second case, Mrs. H—n, it is again the food preparer who acts as the typhoid carrier. After recovery from her November attack she continued her household duties and everything went well until the end of May or June, when the whole family, except herself and one son, were infected with the typhoid bacillus.

We may now summarise shortly some of the carrier cases already reported.

Kayser's and Klinger's carrier cases.—

CASE 1.—Mrs. E., a confectioner, had enteric fever in 1894. Nearly all her assistants suffered from indigestion and diarrhœa shortly after entering her service. On May 20th, 1904, her assistant, L. R., had enteric fever. On May 24th typhoid bacilli were found in the stools of Mrs. E. On August 8th, 1904, her lodger, J. W., was attacked with enteric fever.

CASE 2.—Mrs. M., a secondhand clothes dealer, had enteric fever in 1874. In 1899 she had an attack of severe biliary colic. On Nov. 24th, 1904, she was found to be a carrier. On May 20th, 1904, her son-in-law, who lived with her, fell ill with enteric fever. On Nov. 17th, 1904, her lodger, A. B., was similarly attacked.

CASE 3.—Mrs. Z., a tailor's wife. In January, 1905, a new servant came into the house. Three weeks later the maid developed enteric fever.

CASE 4.—Mrs. L. Her servant was attacked with enteric fever in April, 1905.

CASE 5.—Miss N. had enteric fever in 1881. Her servant showed signs of enteric fever on June 28th, 1905.

CASE 6.—Mrs. S. had enteric fever in 1877. In August, 1900, she had an attack of biliary colic. In September her children developed typhoid fever.

Soper's case.—The details of this case have been so carefully and fully worked out by Dr. Soper that we may safely assume that during the intervals of the dates mentioned the carrier was "ineffective." In June, 1902, the carrier, who was a cook, joined a family three weeks before the summer exodus. At the end of this time enteric fever appeared. In October, 1903, she entered the service of another family. Nine months later—viz., June, 1904—the family went for the summer holiday, taking the cook with

* The superior figures refer to the bibliography at the end.

CHART 1.—Observations on Carrier Mrs. H.

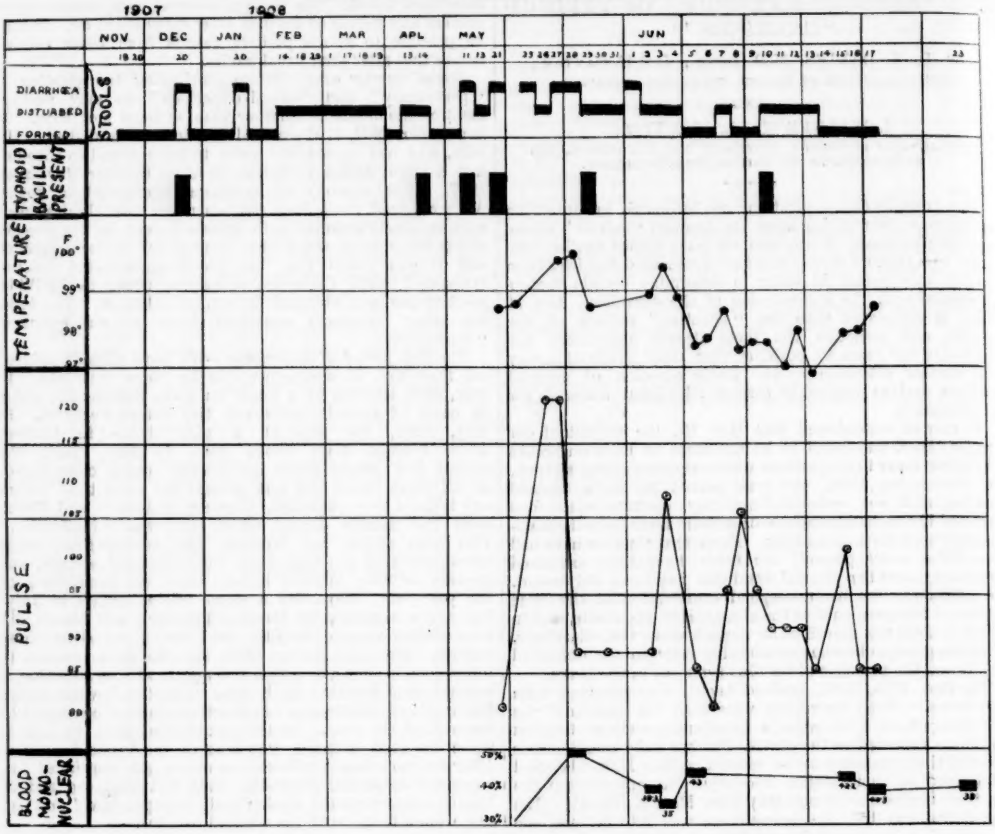

CHART 2.—Periodicity.

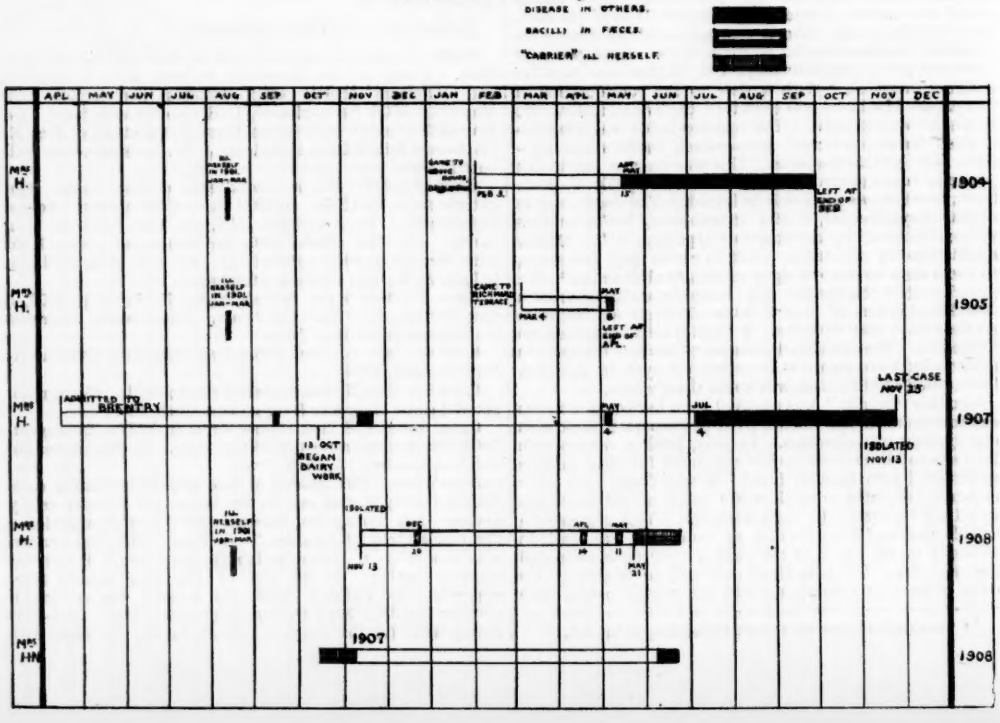

CHART 3.—Periodicity.

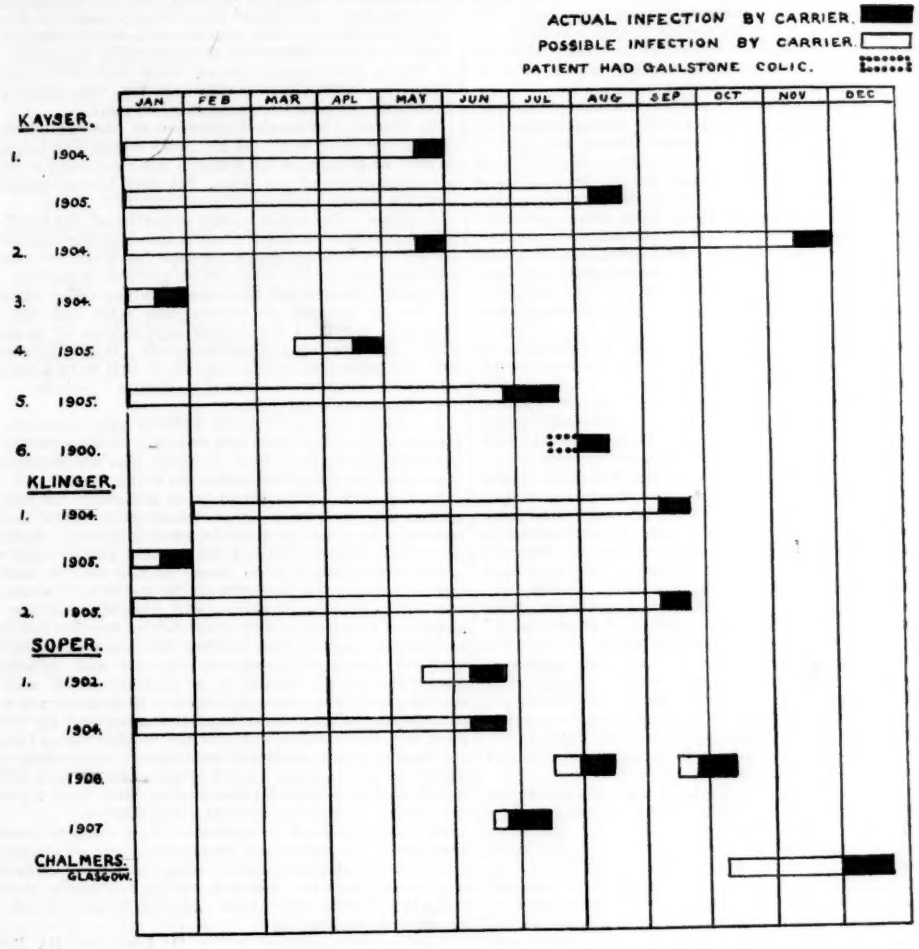

CHART 4.—Typhoid Bacilli in Fæces.

	JAN	FEB	MAR	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
H.	OO	OOO	OOO	+	++	O+					+	+
KAYSER.		O O	O						+			
KLINGER. 1.	O	++O	O	+ O	O +	+	+	O O	O	O +	++	+
... 2.		O+	+	+	+							

The + signifies presence of typhoid bacilli and the O signifies their absence.

them. Arrived at their summer residence the household visited had an outbreak of enteric fever. Either the carrier had been "ineffective" during these nine months or the members of the family had been immunised. The cook found a new situation, and in September, 1906, she caused another outbreak of enteric fever shortly after she arrived, while in January, 1907, another family owed its attack of enteric fever to her entry into the house.

When these outbreaks due to typhoid carriers are mapped out, as in Chart 3, several interesting points appear. It has been already pointed out that the fæces of the typhoid carrier do not always contain typhoid bacilli. Chart 3 shows that the "effectiveness" of the carrier is also intermittent. The thin line on the chart covers the periods when the carrier was in such relation with other persons—generally as a food preparer—as to make infection possible. The shaded areas indicate the times when the potential became an actual infection. For every carrier, therefore, there appear to be periods of maximum and minimum danger, and a knowledge of these times should be of great value in prophylaxis.

Another point which arises during a consideration of Chart 3 is the almost uniform absence of "effectiveness" of the carrier during the early months of the year. The evidence already gained goes to prove that the typhoid bacillus may live for considerable periods in the gall-bladder and hepatic bile-passages, and there is little doubt but that the carrier harbours the typhoid bacillus continuously.

What is the meaning of this period in which the carrier fails to be "effective"? Is it simply coincidence, or shall we find it appearing uniformly when a larger number of cases are available for reference? Has it anything to do with periodicity in the virulence of the bacillus? Does the organism live a "hibernant" existence in the intra- and extra-hepatic biliary passages during these months, and become actively parasitic on re-awakening for the remaining months of the year? Has this "period of effectiveness" anything to do with the type of food taken, or with the general tissue metabolism, or with the heat regulation apparatus? Does this "seasonal effectivity" offer any explanation of the "waves" of endemic enteric fever, the May revival starting the supply of fresh infections which subsequently develop by extension into the autumnal burst? These are questions which call for further observations, and we do not propose to anticipate the replies.

The seasonal waves of typhoid fever are quite characteristic, and the variations in the virulence of epidemics often exhibit "local" features; sometimes, however, the local virulence may assume national characters. We do not know the causes which are responsible for the intensifications of the virus, but evidence is accumulating to show that the human tissues play a definite part. Direct transmission of human fæces at a period of bacterial virulency to water, milk, shell-fish, or other media in which the organism can proliferate is responsible for widespread outbreaks. Human excreta when spread over the surface of soil may prove effective through the agencies of flies or strong wind currents, but it has to be remembered that typhoid bacilli do not proliferate actively in surface soil and cease to be viable after a few weeks (*vide* Mair [2]), so that soil infection probably accounts for a small proportion of cases only. Climatic influences are conjectural; it is possible so to arrange the evidence from Britain, Europe, India, and the tropics that rain, drought, heat, and moisture may be severally indicted. Cold alone occupies an isolated position.

When sporadic outbreaks are contrasted with epidemic human transmission again assumes importance. There is every hope that an intelligent appreciation of this fact by the typhoid convalescent may minimise the occurrence of scattered cases of enteric fever, but it is the obvious duty of the physician to frame rules for the guidance of the patient and to see that they are carried out (*vide* Appendix). Similarly, it behoves the community to protect itself from possibilities of infection by the provision of adequate control over typhoid convalescents. There are certain indications which might be followed until more knowledge points to other pathways.

1. *Systematic examination of the fæces of convalescents or suspected carriers.*—These examinations must be made day by day and extend over long periods. Chart 4 shows that it is impossible to accept any statement as to the periods of infectiveness or freedom from infection unless records of daily examinations are available. Anyone who undertakes this class of work knows that the demands on time, technique, and labour are so great that the community will no doubt adopt the plan of precautionary measures for those convalescents who have contact with foods either in the homes or in the distribution of meat, milk, vegetables, &c., or during the manufacture of cocoa and other eatables, reserving bacteriological measures for the cases whose periodicity does not follow the usual course.

2. *Urine.*—The marked excretion of the typhoid bacilli during the later weeks of the acute attack does not appear to have its parallel in the carrier. We have made a number of examinations of the urine, but they have so far yielded negative results.

3. *Blood.*—The agglutinating properties of the blood may afford evidence of the "effectiveness" of the carrier, but during the attack of Mrs. H. in June her Widal reaction did not vary from the 1 in 25 found on previous occasions. The differential counts we have made in the cases examined yielded an increase of mononuclear cells and this has suggested the need for further observations of a similar nature upon carriers and convalescents. It is quite possible that the extended inquiry may show this to be a valuable adjunct in the determination of "effective" periods.

4. *Temperature and pulse.*

5. *Hands.*—It may be worth while to make bacteriological examination of the nails and fingers. Positive results will exert marked mental effect on those who are requested to take antiseptic precautions after the toilet.

6. *Immunity.*—Determinations of immunity can only be carried out in bacteriological laboratories, but it may be necessary to resort to them in some instances. Speaking generally, the immunity of the typhoid carrier must vary considerably from time to time. It lies near to hand to think of raising the immunity of the carrier by injections of vaccines. Such a procedure will probably minimise the chances of re-infection, so that the carrier becomes less liable to recurrent attacks, but whether the raised immunity will comprise increased bactericidal powers and subsequent destruction of the bacilli is a question which can be answered only when investigations now in progress are more advanced and when our results of treatment with tar derivatives, &c., are available. We do not consider that a typhoid carrier should be considered as "cured" until daily examinations of the fæces have determined the absence of the bacilli during a period extending at least from April to November. This fact is brought out in Chart 4.

We do not attempt to generalise from these necessarily incomplete and preliminary observations, and we venture to hope that the profession, while using prophylactic measures to their full, will not rush into anti-typhoid-carrier therapy until the details have been adequately determined by laboratory investigations.

We are much indebted to Dr. D. Fleck and Dr. R. A. Beaver for their unwearied help in the collection of material and clinical observations and to Mr. J. C. Heaven for collaboration in the preparation of charts.

APPENDIX.

SUGGESTED INSTRUCTIONS TO TYPHOID CONVALESCENTS.

(To be handed to Patients when discharged from Hospital.)

Typhoid fever is caused by a germ (the typhoid bacillus) which enter the body in food or drink or swallowed dust. When the convalescent stage is reached, the germ may remain in the intestines, and cause relapses of the disease. Sometimes the germ remains permanently in the intestines, and may cause a return of the disease many years after the first attack. The germ may also induce the formation of gall-stones. Thus it is evident that the contents of the intestine of the typhoid convalescent are infective, and that the convalescent may be the unconscious means of transmitting the disease to his, or her, own family or friends. Cooks, male or female, dairymen or dairywomen, milk-vendors, greengrocers, butchers, fishmongers, provision dealers, workers in cocoa, chocolate, or confectionery, waiters and waitresses, and the mother who prepares food for the family, form a class of convalescents in which the opportunities of transmission of the disease are very frequent. The following provisional rules are suggested with a view to diminish the risk of infection:—

1. The hands and nails should be thoroughly washed, first in disinfectant solution, then in soap and water, and well rinsed before touching any foodstuffs, especially milk.

2. After the bowels are opened or the bladder is emptied the hands and nails should be at once disinfected and washed.

3. Strong disinfecting solution should be poured over the stools, &c., before the plug of the water-closet is used or the lid of the dry closet is shut down.

4. When the motions are loose the risk of infection is increased and additional care should be taken.

5. The convalescent should periodically visit the medical attendant, so that the blood, &c., may be tested, and measures may be taken to

[1] A the
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control the action of the germs. As there is generally no need to deal with the drains, or to disinfect rooms or houses for these special cases, no upset of the domestic arrangements is necessary.

6. In the household where a patient is convalescing from typhoid fever the additional precautions of boiling all the milk or water used for drinking or in the preparation of food should be undertaken, and uncooked foods should be avoided.

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Bristol.

THE COMMON COLD: ITS PATHOLOGY AND TREATMENT,

WITH ESPECIAL REFERENCE TO VACCINE THERAPY.[1]

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I.—INTRODUCTION.

IN a recent publication on catarrhal fevers by Dr. R. Prosser White we find the following: "I venture to submit that our zeal and interest in a disease should be proportional not to its rarity but to its frequency; and to call trifling, a disease which incapacitates members of every class of society oftener and more commonly than any other, and has the reputation of initiating so diverse and numerous ailments, is a travesty of facts. This condition, the bane of the household and the scourge of the community is allowed to run riot, practically ignored by our leaders, our medical schools and our text-books." A feeling exactly in accord with that expressed by these very true words was the cause of my undertaking the present research into this common affection, which, again to quote Dr. Prosser White, "is a source of inconvenience, if not danger, to the strong, and is often followed by severest consequences in the old and the young, the feeble and the debilitated—which may be the active factor in overburdening an already embarrassed heart, setting up the final catarrh in the later stages of phthisis or multiplying the difficulties and distresses of the chronic invalid suffering from bronchitis and emphysema." The work conducted during two years' tenure of the Gull studentship has been completed in my private practice, with the result that I think I can fairly claim to have placed the bacteriology upon a sounder footing, indicated means whereby a differential diagnosis of the causal organism or organisms may be made in any given case from a consideration of the clinical features, and to have demonstrated the utility of vaccine therapy not only in shortening acute attacks and thereby preventing secondary complications, but also in curing chronic cases and in securing immunity, more or less complete, from further attacks, acute or chronic, in those who are especially susceptible to this very troublesome and common complaint.

II.—DEFINITION OF A COLD.

For the purposes of this research a cold may be defined as a local inflammation of any portion of the respiratory tract, from the mouth and external nasal meatus to the bifurcation of the bronchi, together with the sinuses annexed thereto; such as the frontal and ethmoidal sinuses, the maxillary antrum, and the Eustachian tube; inflammations due to the ordinary pyogenic cocci are, however, excluded. The conditions thus included are the so-called colds in the head, sore throats, and tracheal coughs. The word "fever" has been avoided, inasmuch as any rise of temperature is, more often than not, local and not general; indeed, the true body temperature, obtained either per rectum or by means of the urine, is more often than not subnormal. Colds are always acute at the onset but may go on to a chronic stage, persisting for even 20 years, punctuated at intervals by acute exacerbations. The acute cold exhibits the following stages. 1. Local anæmia of the mucous membrane. This probably precedes infection, so ought perhaps to be called a pre-catarrhal condition. This is succeeded by local hyperæmia, the natural response of the body to the preceding anæmia. 2. After infection there is a period of incubation, during which the hyperæmia increases to a greater or less extent. Few opportunities of measuring this have presented themselves, but in one case it could be fixed at only two hours; the usual period, however, seems to be about 12 hours, but varies according as to whether the infection is a fresh one from without or due to a lighting up into activity of organisms already resident in these parts. During this period there may be dryness and tickling of the palate and fauces and a few sneezes may be given, soon to be followed by a general feeling of malaise and chilliness, which marks the completion of the incubation period and the onset of the third stage—viz., the period which may be called the "catarrhal plateau." This is characterised by greatly increased mucous secretion, the attempt of the body to rid itself of the invaders. If the fauces be involved there is a definite sore-throat, if the trachea a resultant cough. The feeling of general malaise continues, often accompanied by headache, constipation, and distaste for food; there may be some pyrexia; the secretion of sweat and urine is diminished and the latter may be loaded with urates. After from 18 to 48 hours the mucous secretion diminishes and the fourth or subacute stage is entered upon. The mucous discharges become thick and contain leucocytes and lymphoid cells which cause the discharges to become yellow in colour. This lasts for a period varying from two or three days to as many weeks, when it either ceases and cure is established, or it persists for months or even years and enters upon the fifth stage, which is that of true chronicity, marked by continuous excessive secretion of thick mucus and the feeling aptly described as "stuffiness of the nose." Such a chronic condition is punctuated at intervals by periods of exacerbation or by acute attacks due to a second organism.

III.—BACTERIOLOGY.

A.—*Technique Employed.*

Before any attempt can be made at the determination of the bacterial agents in the production of pathological conditions it is obviously necessary to determine what are the normal bacterial inhabitants of the part or parts. Accordingly healthy noses and throats were examined as well as catarrhal. The technique employed was as follows.

1. *For the trachea.*—The mouth having been thoroughly gargled several times with sterile water, by means of a violent cough some mucus was expectorated and received in sterilised water; a small compact piece was washed two or three times and then inseminated upon one or more of the following—agar, blood agar, nutrose ascitic agar or so-called "nasgar," blood serum. After 24 hours' incubation at 37° C. films were prepared as well as some from the original mucus, stained with methylene blue and by Gram's method, and examined microscopically. The organisms were then isolated when necessary.

2. *For the throat.*—Swabs were taken from the hyperæmic areas, soft palate, posterior pharyngeal wall, fauces or tonsils, and treated as in the case of the tracheal mucus.

3. *For the nose.*—In order to avoid contamination with the organisms infecting the vibrissæ and vestibule the following procedures were adopted: (*a*) A piece of sterilised glass tubing about three inches long and of ample bore so as to admit the passage of a platinum loop was inserted up the nostril; along this tube a sterile loop was pushed and the protruded end rubbed over the surface of the nasal mucosa; it was then withdrawn through the glass tubing and a smear made upon agar, blood agar, blood serum, or nasgar, two or three such smears being usually made upon different media. (*b*) As an alternative method a sterilised nasal speculum was used to separate the nasal orifice and by means of a sterile swab cultures taken as high up the septum and turbinals as it was possible to get. (*c*) Experiment, however, showed that these precautions were hardly necessary in the case of nasal catarrh where organisms are always plentiful and that certain advantages were to be obtained by using the following procedure. The orifice of the nose having been well washed with warm soap and water and dried upon sterile lint, one nostril was closed and the nasal secretion forcibly expelled from the other upon sterilised cotton-wool. Ample material is thus obtained to inseminate numerous tubes and plates and to prepare films. In several cases cultures were made by two of these methods and identical results obtained.

[1] A thesis accepted for the M.D. degree (Branch II.), University of London.

In from 18 to 24 hours smears were made from the cultures and stained by Gram's method and with carbol methylene blue and with carbol fuchsin. Subcultures were then made upon agar and nasgar plates and the organisms which preponderated in numbers isolated.

B.—*Results Obtained.*

1. *Trachea.*—Inasmuch as no appreciable amount of mucus can be secured from the trachea in health the only results obtained have been from catarrhal cases. In every one of the cases a coccus was isolated which did not stain by Gram's method. The various cultural reactions in broth, on agar, gelatine, and nutrose ascitic agar (nasgar), as well as the microscopical appearances, indicated that this was an organism indistinguishable from the micrococcus catarrhalis. Cocci staining by Gram's method as well as various bacilli both staining and failing to stain by Gram's method were occasionally found, but were not constant like the micrococcus catarrhalis. It is therefore possible that this latter organism may be the common cause of tracheitis and by downward extension possibly, too, of bronchitis. It must, however, be noted that –Gram cocci are present in 78 per cent. of normal throats and in 68 per cent. of catarrhal throats. The micrococcus paratetragenus described by Roger in 1897, and also found by Bezançon and de Jong[2] in many cases during an epidemic of bronchial catarrhs in Paris in 1904–05, and by Benham[3] in 11 out of 14 cases investigated in Brighton during 1907–08, was not met with.

2. *Throats.*—The bacteriological findings from 23 cases of as healthy throats as could be obtained and from 180 cases of non-diphtheritic inflammatory throats are given in Table I. The results were both disappointing and confusing. As is seen in the table, there were as many diphtheroids, —Gram cocci and Friedländer's bacilli, in the one class as in the other. In neither was the micrococcus paratetragenus ever seen in films or cultures.

TABLE I.

	Healthy.		Inflammatory.	
Diphtheroids	39 per cent.		38 per cent.	
Bacillus septus	35	39 per cent.	29	38 per cent.
Hoffmann's bacillus	4		9	
– Gram cocci	78		68	
+ Gram cocci	70		83	
+ Gram bacilli	40		40	
Bacillus of Friedländer	4		3·3	

Two points may, however, be noticed. First, the question of virulence and pathogenicity could not be determined; and secondly, my figures for diphtheroids in normal throats is very much higher than that found by most authorities—viz., about 8 per cent. Whether the small number of cases examined (23), the class of patient (medical students and out-patients at hospital), or the time of the year (January and February) is responsible for this great divergence I am unable to say. In a series of 20 cases of slight sore throat accompanied by cold in the head or tracheal cough either diphtheroids, or –Gram cocci, or both, were present in every instance, and I can only express the belief that these organisms are concerned in the production of sore throats. Dr. M. H. Gordon by the accidental absorption through a pipette of an emulsion of micrococcus catarrhalis has established the fact of this organism being capable of doing so.

3. *Noses.*—The difficulty of securing reliable bacteriological examinations of normal nasal cavities is great in London as so few people fail to give a history of recent colds; in the case of 20 as normal noses as were obtainable the following were the results of the alternative method mentioned under 3 (*b*). None were absolutely sterile but five only yielded air organisms such as sarcina lutea and aurantiaca, 10 gave only +Gram-staining cocci, six of these being staphylococcus albus, two staphylococcus aureus, and two staphylococci albus and aureus. From the remaining five cases in addition to Gram-staining cocci, the bacillus septus was obtained in one, and cocci failing to retain the stain by Gram's method and belonging to the pseudo-catarrhalis group in the other four. Air organisms were also present in most of these 15 cases. Of published observations elsewhere may be mentioned those of Hasslauer,[4] who examined 111 cavities and found staphylococcus pyogenes albus in 25 per cent., pneumococcus in 20 per cent., streptococcus pyogenes in 17 per cent., and diphtheroids in 13 per cent., more than one and not more than three or four different organisms being present. Von Besser[5] examined 81 cases and found staphylococcus pyogenes aureus in 17·5 per cent., pneumococcus in 17·5 per cent., streptococcus pyogenes in 8·7 per cent., and Friedländer's bacillus in 2·5 per cent. Lewis and Turner[6] examined 26 specimens from 16 persons; only three of these were sterile, in 13 only one organism was present, in nine two organisms only, and in one three organisms. On investigating the pathogenicity of the organisms which they isolated these last observers found that the organisms derived from nine healthy noses were non-pathogenic to animals, and in two cases they were pathogenic, and the conclusion was arrived at that not only are the organisms present only in small numbers but that their virulence and vitality alike are low.

The bacteriology of the mucosa in 42 cases of colds investigated in London during the years 1905, 1906, 1907, 1908.—The results which I have obtained in 42 cases of colds are given in tabular form in Table II.; only the presence of organisms which may be regarded as possibly causal is indicated. A few cocci staining by Gram's method and occasional non-pathogenic air organisms were also found in the cultures, but once identified as such were then disregarded. It will be seen that only one of the four organisms was present in the great majority of the cases. In Nos. 2 and 6 (Table III.) a very few of the second organisms were present, while in Nos. 11, 13, and 21 two organisms were found in about equal numbers; these last three cases were of a specially severe type.

TABLE II.

Bacillus of Friedländer alone	In 8 cases	= 19 per cent.	
,, influenzæ	,, 1 case	= 2·4	,,
,, septus	,, 11 cases	= 26·2	,,
Micrococcus catarrhalis	,, 12 ,,	= 28·6	,,
Bacillus of Friedländer + bacillus septus	,, 3 ,,	= 7·1	,,
Bacillus of Friedländer + micrococcus catarrhalis	,, 2 ,,	= 4·7	,,
Bacillus septus + micrococcus catarrhalis	,, 4 ,,	= 9·7	,,
No definite organism isolated	,, 1 case	= 2·4	,,
Total number of cases	42		

Too much importance must not be attached to the percentage figures given, although the results are obtained from observations spread over nearly four years. The bacillus of Friedländer is, I think, thereby made out to be a more frequent cause of colds than it really is, while the figures for bacillus septus and micrococcus catarrhalis are too low. By studying, say, 50 cases in any given epidemic results totally at variance with these might be obtained and a percentage value of even 100 obtained for either the bacillus septus or micrococcus catarrhalis. It is due to this fact that the claims of these organisms have been unduly pressed at various times by different observers. The rarity of the bacillus influenzæ and the total absence of the micrococcus paratetragenus are alike striking in the above series; this is probably due entirely to the fact that London was not affected by epidemics due to either of the above micro-organisms during these years.

C. *Justification of the View that Colds are Due to the Organisms Indicated.*

It may well be asked what grounds there are for regarding these several organisms as even being capable of producing colds, and still more especially of having produced the particular attacks here indicated, inasmuch as it has been shown that the micrococcus catarrhalis and closely allied forms are frequently resident in the healthy tract, that the bacillus of Friedländer is present in between 2 and 4 per cent. of healthy noses, and that diphtheroids infect from 8 to 12 per cent. of noses and throats presenting no pathological features. To this it may be replied that from a certain percentage of normal throats pneumococci or the Klebs-Löffler bacillus may be similarly isolated and may even

[2] Bulletin de la Société Médicale des Hôpitaux de Paris, March 2nd and 16th, 1905.

[3] Proceedings of the Brighton and Sussex Medico-Chirurgical Society, 1908, p. 84.

[4] Centralblatt für Bakteriologie und Parasitologie, Jena, 1902, Band xxxiii., p. 47.

[5] Beiträge zur Pathologischen Anatomie und Allgemeinen Pathologie, Jena, 1889, Band vi., S. 33.

[6] Edinburgh Medical Journal, November, 1905, p. 393.

possess pathogenic properties, and yet these cases have neither pneumonia on the one hand nor diphtheria on the other. The important factors are, *inter alia*, first, one of pathogenicity of the organism, and, secondly, of susceptibility of the individual. These questions I have the more fully investigated in the case of the bacillus of Friedländer and the inference of its causal relationship seems amply justified.

TABLE III.—*Summary of the Bacteriology of the Cases.*

No. of case.	Nature of case.	Bacillus of Friedländer.	Bacillus Influenzæ.	Bacillus septus.	Micrococcus catarrhalis.
1	Chronic 12 years.	+	—	—	—
2	Acute 2 days.	—	—	Few.	+
3	,, 1 day.	+	—	—	—
4	Acute upon chronic of 4 months.	+	—	—	—
5	Acute 1 day upon subacute of 2 weeks.	+	—	—	—
6	Acute 5 days.	+	—	Few.	—
7	,, 12 hours.	—	+	—	—
8	,, 12 ,,	—	—	+	—
9	,, 3 ,,	—	—	+	—
10	Subacute 12 days.	—	—	—	+
11	Acute 2 days.	—	—	+	+
12	,, 1 day.	—	—	—	+
13	,, 2 days.	+	—	+	—
14	,, 1 day.	—	—	+	—
15	Subacute 14 days.	—	—	+	—
16	Chronic 17 years.	+	—	—	—
17	Acute 2 days.	—	—	+	—
18	,, 3 days.	—	—	—	+
19	,, 1 day.	+	—	—	—
20	,, 1 ,,	+	—	—	—
21	,, 1 ,,	+	—	+	—
22	,, 2 hours.	+	—	—	—
23	,, 2 ,,	—	—	—	+
24	,, 2 days.	—	—	+	—
25	,, 1 day.	—	—	+	+
26	,, 4 days.	—	—	+	—
27	Acute on subacute of 14 days.	—	—	—	+
28	Acute 1 day.	—	—	—	+
29	,, 2 days.	+	—	—	+
30	,, ,,	—	—	+	—
31	Acute two days upon chronic of 20 years.	+	—	—	+
32	Acute 1 day.	—	—	+	—
33	,, 3 days.	—	—	+	+
34	Chronic tracheal catarrh of 20 years.	—	—	—	+
35	Acute outburst in No. 34.	—	—	—	+
36	Acute 1 day.	—	—	—	+
37	,, 3 days.	?	—	—	—
38	,, 2 ,,	—	—	+	—
39	,, 3 ,,	—	—	—	+
40	,, 3 ,,	—	—	—	+
41	,, 1 day.	—	—	—	+
42	Chronic 10 years, with acute outbursts.	—	—	+	+

As regards pathogenicity, each strain on isolation was introduced into a rabbit, rat, and guinea-pig. In all but two cases where the animals were made extremely ill but survived for three days, when they were killed by chloroform, the animals died, usually within 24 hours. In every case the typical capsulated diplo-bacilli were recovered from the heart blood and peritoneal fluid; post mortem the animals presented areas of pneumonic lung, enlarged spleens, and, where the inoculation had been intraperitoneal, peritonitis, especially over the liver and spleen. The virulence was of a high degree.

Secondly, Case 1 was proved to have the organism continually present in large numbers in the nasal mucosa. During several exacerbations these were discharged from the nose in large numbers; within a very short time workers in the same room, whose nasal cavities had just been proved to be practically sterile and who were free from colds, developed severe attacks, during which the bacillus of Friedländer was found to be abundantly present in their nasal mucus. Further, Case 1 was finally cured both of the chronic and acute attacks by injection of a vaccine prepared from his organism and repeated cultivations have since failed to find the bacillus of Friedländer present. Again, in the instance of Case 4, a chronic one of four months' standing, the disappearance of symptoms and organism was simultaneous.

Thirdly, an emulsion of Friedländer's bacillus was spilt in the laboratory where three individuals were working; within a few hours each developed a mild catarrhal attack during which the bacillus was found in the nasal mucus.

Fourthly, reference to the opsonic charts (1 and 2) appended of Cases 1 and 16 shows that the index to Friedländer's bacillus was abnormally high during the chronic stages and that it was influenced by an exacerbation of the infection just as one would expect it to be were the acute attack due to the given organism.

Fifthly, the percentage of cases in which this organism was found was very much in excess of that found in healthy noses by von Besser, 2·5, and by Lewis and Logan Turner, 4.

The claims of the bacillus influenzæ to be regarded as a cause of nasal catarrh are too well known to require discussion, whilst those of the micrococcus catarrhalis have been well demonstrated by Dunn and Gordon[7] in the case of an epidemic in Hertfordshire which closely simulated influenza, by Pfeiffer, by Lord, and by Bezançon and de Jong in Paris.[8] By accidently sucking up some emulsion of this organism which he had prepared Gordon[9] records the onset after 24 hours of a cold which gradually extended down the trachea. From the nasal discharge he recovered the organism at the close of the attack. In Cases 2, 10, 12, 18, 23, 27, 28, 35, 36, 39, 40, and 44 this organism was obtained in practically pure culture from the nasal mucus. The patient in Case 2 was one of a household of eight who had been attacked one after the other by severe colds. Cases 27, 25, and 28 present this interesting feature—they were "contacts." Case 27 had had a subacute attack for about 14 days and developed an acute cold without sore throat. 24 hours later patient No. 25 had a severe cold beginning with a sore throat. No. 28 then came into contact with No. 25 and followed suit without a sore throat. All three patients yielded abundant growth of the micrococcus catarrhalis; from No. 25 alone was the bacillus septus in addition isolated.

As regards the capacity of the micrococcus catarrhalis to produce nasal catarrh there is then little doubt, but whether it is the direct causal agent in all catarrhal cases in which it alone is isolated is not so certain. A coccus at all events very closely allied to it is, as I have shown, an extremely common inhabitant in normal throats, perhaps even to the extent of from 70 to 80 per cent.

The claims of the bacillus septus are much more difficult to decide. It is true that Cautley[10] found it in seven out of eight cases of cold which he investigated, or in 88 per cent., Prosser White[11] in 17 out of 21, or in 81 per cent., and Benham in 25 out of 27, or in 91 per cent. My results were in 11 out of 42 cases, or 26·2 per cent., by itself, and in three others along with Friedländer's bacillus and in two with the micrococcus catarrhalis. It is true that the percentage of healthy noses which nurture this organism is between 8 and 12 per cent. and the contrast seems almost convincing. It must, however, be noted that these observers were not aware that Friedländer's bacillus could produce a cold and accordingly omitted to consider its etiological claims. In five out of his 27 cases Benham found —Gram bacilli and one of these was proved to be the bacillus of Friedländer and the others may have been; in two others the bacillus influenzæ seems to have been present, and in yet 13 other

[7] Brit. Med. Jour., August 26th, 1905.
[8] Bulletin de la Société Médicale des Hôpitaux de Paris, March 2nd and 16th, 1905.
[9] Brit. Med. Jour., June 2nd, 1906, p. 1318.
[10] Local Government Board Reports, 1894-95.
[11] Catarrhal Fevers.

instances - Gram cocci which may have been micrococcus catarrhalis were seen, and in two cases isolated and proved to be the micrococcus catarrhalis, so that Benham's deductions may be entirely misleading, as may also be those of the other observers above referred to. A consideration of the occurrence in catarrhal affections of the eye and urethra of its close ally, bacillus xerosis, still further weakens its claims. Pathologists no longer regard this as a pathogenic organism, yet in the healthy eye and healthy urethra it is not commonly present, whereas in catarrhal conditions set up by the Koch-Weeks and Morax-Axenfeld bacilli and by the gonococcus it is practically omnipresent (in between

together. Further, in the instance of Case 17, a medical man and close observer, suffering from an acute attack, to which he was very subject and which always continued subacute for several weeks, I isolated this organism and made a vaccine for the patient. Upon the sixth day when he felt very ill I injected him with 275,000,000 dead organisms. On the next day he was better, and on the following day he was quite well, while his index rose from 0·9 to 1·7. Again, a friend who travels much by rail and always catches cold and sore throat on these occasions, upon several of which I isolated the bacillus septus, was about to undertake a long train journey; he welcomed the suggestion of an inoculation and

TABLE IV.—*Table of Symptoms, with Bacteriological Findings.*

No. of case.	Headache.	Malaise.	Sore throat.	Tonsillitis.	Cough.	Nasal discharge.	Muscle pains.	Temperature above 100° F.	Eustachian tube involved.	Sneezing.	Tracheitis and bronchitis.	Acute.	Subacute.	Chronic.	Bacillus septus.	Bacillus influenzæ.	Bacillus Friedländer.	Micrococcus catarrhalis.
1	—	++	—	+	—	+++	—	—	—	+	—	—	—	+	—	—	+	—
2	++	++	—	—	—	++	+	—	—	+	—	+	—	—	—	—	—	+
3	-	+	—	—	—	++	—	—	+	+	—	+	—	—	—	—	+	—
4	—	+	—	—	—	+	—	—	—	+	—	—	+	—	—	—	+	—
5	—	++	—	—	—	++	—	—	—	+	—	—	+	—	—	—	+	—
6	—	++	+	—	—	++	—	+	—	—	—	+	—	—	+	—	+	—
7	—	++	—	—	+	++	—	+	—	—	—	+	—	—	—	+	—	—
8	—	—	+	—	—	+	—	—	—	+	—	+	—	—	+	—	—	—
9	—	—	+	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	+	+	—	—	—	—	+	—	+	—	—	—	—	+
11	—	+	+	—	+	+	—	—	—	—	—	+	—	—	+	—	—	+
12	—	+	+	+	+	+	—	—	—	—	+	+	—	—	—	—	—	+
13	+	++	+	+	—	+++	+	—	—	—	—	+	—	—	+	—	+	—
14	—	—	—	—	+	++	—	—	—	+	—	+	—	—	+	—	—	+
15	—	—	—	+	—	—	—	—	—	—	—	+	—	—	+	—	—	—
16	—	—	—	—	—	+	—	—	+	—	+	—	—	+	—	—	+	—
17	—	+	+	—	—	+	—	—	—	—	—	+	—	—	+	—	—	—
18	++	—	+	+	—	+	—	+	—	—	+	+	—	—	—	—	—	+
19	—	+	—	—	—	+++	—	—	—	—	—	+	—	—	—	—	+	—
20	—	+	—	—	—	++	—	—	+	+	—	+	—	—	—	—	+	—
21	—	++	++	—	—	++	++	+	—	—	—	+	—	—	+	—	+	—
22	—	+	—	—	—	++	—	—	—	+	—	+	—	—	—	—	+	—
23	—	+	—	—	++	++	—	—	—	—	+	+	+	—	—	—	—	+
24	+	+	+	—	—	+	+	—	—	—	—	+	—	—	+	—	—	—
25	—	—	+	—	+	+	—	—	—	—	+	+	—	—	+	—	—	+
26	—	—	+	—	—	+	—	—	—	—	—	+	—	—	+	—	—	—
27	—	+	—	—	+	+	—	—	—	—	—	—	+	—	—	—	—	+
28	—	—	—	—	+	++	—	—	—	—	—	+	—	—	—	—	—	+
29	+	++	—	—	++	+++	++	—	+	—	+	+	—	—	—	—	+	+
30	—	—	+	—	—	+	—	—	—	—	—	+	—	—	+	—	—	—
31	+	+	—	—	—	+	—	—	+	—	—	—	—	+	—	—	+	—
32	+	+	+	—	++	++	—	—	—	+	+	—	+	—	+	—	—	+
33	—	—	+	+	+	++	—	—	—	—	+	+	—	—	+	—	—	+
34	—	—	—	—	+	—	—	—	—	—	—	—	—	+	—	—	—	+
35	—	—	+	—	+	+	—	—	—	—	—	+	—	—	—	—	—	+
36	—	+	—	—	++	+	—	—	—	—	+	+	—	—	—	—	—	+
37	+	+	—	—	—	++	—	—	—	—	—	+	—	—	—	—	?	—
38	—	—	+	—	—	+	—	—	—	—	—	+	—	—	+	—	—	—
39	—	+	—	—	+	++	—	—	—	—	—	+	—	—	—	—	—	+
40	—	—	—	—	++	++	—	—	—	—	—	+	—	—	—	—	—	+
41	—	++	—	—	++	+	—	—	—	+	+	+	—	—	—	—	—	+
42	—	—	+	—	—	++	—	—	+	—	—	—	—	+	+	—	—	+

95 and 99 per cent. of all cases). My figures—in 9 out of 20, or 45 per cent.—moreover show that it may be a very common inhabitant of the non-catarrhal throat. Distinct evidence of the pathogenicity of the bacillus septus is therefore very necessary and is so far entirely lacking, despite several attempts at demonstration. Despite these facts certain considerations induce me to think that it is a factor in the production of colds. In 11 out of my 42 cases this organism was present in almost pure culture—at least, despite the use of such culture media as blood agar, blood serum, and nutrose ascitic agar I could find no other organism recognised as the possible cause of a cold. The cold and organism disappeared

was given 275,000,000 dead organisms. Despite a long and very cold all-night journey, for the first time for years he developed neither sore throat nor nasal catarrh, nor during the succeeding 12 months has he developed a cold at all. Close attention to the clinical symptoms in my cases has revealed the fact that the bacillus of Friedländer rarely, if ever, produces a sore throat. In Cases 6, 13, and 21, in which both the bacillus of Friedländer and the bacillus septus were found a sore throat was a prominent feature, and out of the 11 cases in which the bacillus septus alone was found, ten had pronounced sore throats as the earliest symptom. It would therefore appear that the chief rôle of the

bacillus septus is the production of the sore throat. The fact that in my 220 cases of sore throats the percentage in which this organism was found was only 27 against a percentage of 45 for normal throats would seem to negative this view; but I think that chance, the time of year, or some other factor decreed that my figures for healthy throats should be much too high, for other observers have found the percentage to be between 8 and 12 per cent. To sum up, I believe that the bacillus septus is the true etiological factor in the production of a certain percentage of colds, but that through neglect to use appropriate media and to observe the occurrence of the other possible organisms certain observers have obtained much too high a figure and have been thereby led to the belief that it is *the* cause of the common cold.

As regards the micrococcus paratetragenus, which was not present in any of my cases, ample evidence of pathogenicity is forthcoming. Thus, Bezançon [12] found it in the blood of a patient dying from endocarditis, in a case of fatal pulmonary gangrene, and in the cerebro-spinal fluid of a patient in whom paraplegia followed upon pulmonary infection due to this organism. Not only did he find it in a state of practical purity in the sputum of cases of bronchitis and broncho-pneumonia but also in all those of angina with pultaceous exudate during the winter of 1904-05. Benham [13] records similar results at Brighton during 1907-08.

Three other important considerations there are which strongly substantiate the view that these organisms stand in a directly causal relationship to the common cold. First, that during any given epidemic a diagnosis of the organism present can almost infallibly be made, as is shown later, from consideration of the symptoms, each organism producing its own type of cold; secondly, that during any given epidemic of colds the same organism is recoverable from practically every case in pure culture; and thirdly, that subsequent immunity can be secured by injections at suitable intervals of vaccines of these organisms.

If the results given in Table IV. be compared with those obtained by Benham [14] it will be seen that the symptoms caused by the micrococcus catarrhalis and the micrococcus paratetragenus closely resemble each other.

IV.—Differential Diagnosis of the Several Varieties of Cold.

Each organism produces a more or less distinct type of cold. If only one organism be present the differential diagnosis is, as a rule, easy, but when two occur together, as in six of my cases, the difficulty is greater. Division of colds into acute, subacute, and chronic facilitates the consideration—by subacute I mean lasting from two to three months, with an occasional slight exacerbation; by chronic those that persist over six months, even to 20 years. Examination of Table IV. will show that the following scheme may be drawn up:—

—	Bacillus of Friedländer.	Bacillus influenzæ.	Bacillus septus.	Micrococcus catarrhalis.
Acute	+	+	+	+
Subacute ...	+	No.	Rarely.	+
Chronic... ...	+	—	—	+

Thus we see that the only three cases of truly chronic nasal catarrh which were fully investigated were all due to the bacillus of Friedländer.

While the micrococcus catarrhalis is probably largely responsible for chronic tracheitis—though secondary infection by staphylococci, streptococci, and more or less avirulent pneumococci also probably plays an important part—it would not appear to cause a chronic nasal catarrh, unless perhaps in cases where the infection extends to the accessory sinuses, and especially the Eustachian tube as in Case 42.

Subacute colds appear to be due to either the bacillus of Friedländer or to the micrococcus catarrhalis or micrococcus paratetragenus. The two latter fall into this category from their great tendency to invade the trachea and bronchi. Neither the bacillus of Friedländer nor the bacillus septus, so far as I am aware, induces catarrh of the trachea; the former probably does in those cases of pneumonia for which it is responsible, but after all these are not common. I have never recovered the bacillus septus from tracheal mucus. The persistent hacking tracheal or "winter" cough is thus probably due either to the micrococcus catarrhalis or micrococcus paratetragenus. Not only does the bacillus of Friedländer fail to affect the trachea, but it also does not cause a painful throat, differing in this both from the bacillus septus and the micrococcus catarrhalis. It confines its attention to the nose and accessory sinuses and the post-nasal space.

The differential diagnosis of the acute forms of cold is not very difficult. The mode of onset and the condition of the throat are very helpful. If the first symptoms affect the fauces and pharynx either the micrococcus catarrhalis or the bacillus septus is certainly present; if the larynx and trachea become speedily involved the former of these or micrococcus paratetragenus is indicated; to hear a patient coughing is quite sufficient to enable a diagnosis of micrococcus catarrhalis or micrococcus paratetragenus to be made. The severity of the constitutional symptoms also varies: those of the bacillus septus are but slight, those of the micrococcus paratetragenus are moderate unless the epidemic assume a broncho-pneumonic type, while the lassitude and mental depression in the cases of the three others, and especially of influenza, may be extreme. The temperature is high as a rule (from 100° to 104° F.) only in the case of influenza and is often accompanied by a relatively slow pulse. Other systems, such as the circulatory, nervous, or digestive, also frequently become involved. Nasal catarrh, as a rule, is slight and much yellowish-green lumpy mucus may be expectorated swarming with the bacilli. In the cases due to Friedländer's bacillus the temperature rarely rises above 99·5°, and the pulse is not slow, nor do other systems become involved. The flow of nasal mucus is always extreme; in one case it was found to be between 15 and 20 cubic centimetres per hour.

Value of differential diagnosis in prognosis.—The bacillus of Friedländer being probably the only cause of a chronic nasal catarrh and the risk of involvement of the Eustachian tube, middle ear, and accessory sinuses being considerable, the prognosis in the case of this organism should be very guarded and much greater care should be taken by the patient. As will be mentioned later, the risks of chronicity can be considerably reduced by the administration of an autogenous vaccine.

In the case of the bacillus septus even sub-chronicity is rare and complications of any sort are very little to be dreaded; this is the type of cold which gets well of itself with very little attention and a good prognosis can therefore be given.

The case of the micrococcus catarrhalis stands upon a different footing and the prognosis must be much more guarded. Extension to the Eustachian tube and middle ear is not altogether infrequent, while downward extension to the trachea and bronchi is habitual.[15] A persistence of the cough is therefore to be anticipated and possible bronchial complications are to be feared. I doubt if these latter ever occur with the bacillus septus and probably but rarely with the bacillus of Friedländer. The nervous, digestive, and circulatory systems are also liable to be affected.

These remarks about the micrococcus catarrhalis probably hold with additional force in the case of the bacillus influenzæ, but of this I cannot speak from experience, having only encountered one mild case during the past four years.

In the case of the micrococcus paratetragenus the chief danger would appear to be bronchitis and broncho-pneumonia, as in Bezançon and de Jong's cases.

V.—Causation of Colds.

It may be granted that the essential factor is the occurrence of infection; infection alone, however, is insufficient unless the dose of organisms be sufficiently large and their virulence sufficiently great. As we have seen, from 8 to 12 per cent. of healthy noses contain diphtheroids and from 2·5 to 4·0 per cent. Friedländer's bacillus; similarly a considerable percentage of throats harbour pneumococci and

[12] Précis de Microbiologie Clinique, p. 143.

[13] Proceedings of the Brighton and Sussex Medico-Chirurgical Society, 1908.

[14] Loc. cit.

[15] Barker described before the Surgical Section of the Royal Society of Medicine on March 10th last a case of meningitis secondary to otitis media, which in turn must have been secondary to a nasal catarrh. The micrococcus catarrhalis was obtained in pure culture from the middle ear and meninges.

Klebs-Löffler bacilli, yet develop neither pneumonia on the one hand nor diphtheria on the other.

Age.—Colds are the more dangerous to the very young and the very old, but age seems to have no influence whatever upon the incidence of an attack.

Conditions of life.—Those who live much in the open air certainly seem less liable to colds than those who live in cities, but poverty and wealth seem to have but little bearing. Colds are no respecters of persons; if anything the rich are more liable than the poor, or, at all events, they make more of their colds. With a view to ascertain the influence of fatigue and lack of food, upon one day in winter I did without food all day, took excessive exercise, returning home covered with perspiration. Quickly stripping I then stood hot and exhausted at an open window for ten minutes till thoroughly chilled. Although the bacillus of Friedländer was then in my nose, as I had proved the day before, no cold developed. A fortnight later, warmly clad and well fed, I caught an unsought-for cold.

Opsonic index.—Reference to the chart of Case 1 will show that a high opsonic index is no protection against an acute attack, for such supervened when the index stood at 1·56, at 1·36, and again at 1·5. Anything which will, however, cause a sudden lowering of index will probably predispose to an attack. As I will show presently, the tissue plasma has a higher index than that of the blood. It seems probable, then, that local reduction in the index of the tissue plasma of the nasal mucosa is an important adjuvant to infection. How this can be brought about I know not, but can only suggest that local vaso-motor disturbance may play an important part, for one of the earliest symptoms of approaching catarrh is great congestion of the nasal mucosa. This is purely reflex, for it can often be removed by setting up another reflex, as by hanging the head out of an open window, sponging the skin of the body with cold water, or if the affection be unilateral by merely inclining the head to the opposite side. This view is in accord with the universal experience that the onset of a cold may often be determined by a cold draught of air striking the back of the head for a very few minutes. To this question of vaso-motor disturbance reference will again be made under the question of cure. That infection is accompanied, or more probably preceded, by a fall in the opsonic index and recovery by a rise is well shown by the following observations upon Case 1. About six weeks after treatment with a vaccine and cure of the long-standing chronic nasal catarrh a specimen of blood was taken. About 12 hours later all the symptoms of an oncoming acute cold began to develop and a second specimen was taken. Next day the cold had completely aborted and a third sample of blood was obtained. The indices of the three were then found to be as follows: before the onset of the cold, 2·6; at the onset, 2·0; and when the cold had aborted, 5·8. The cause of the spontaneous and speedy recovery was thus very evident.

The influence of the daily processes of life, such as the morning bath, meals, exercise, and rest, upon the opsonic index was also studied. With this end in view specimens of blood were taken at the following times and their indices were determined: (1) immediately on rising; (2) a quarter of an hour after the morning bath; (3) two hours after breakfast; (4) at 4 P.M.; (5) at midnight, i.e., after completion of digestion of dinner and after an evening walk; and (6) at 3 A.M., i.e., after three hours' repose. The results obtained, being the numbers of organisms taken up by 100 polymorphonuclear leucocytes, are set out in the following table:—

TABLE V.

Date.	1	2	3	4	5	6
15/5/06	380	402	435	—	—	—
15/5/06	317	351	380	—	—	—
29/5/06	680	736	733	810	861	—
1/6/06	165	150	134	—	—	—
6/6/06	534	571	—	—	626	536
12/6/06	375	413	—	—	427	—

From this we see that there is a steady gradual rise throughout the day, a maximum seemingly being attained after digestion of the main meal of the day has been completed and after a full day's exercise has been taken. During the night the index steadily falls and from the determination of 6/6/06 would seem to reach a minimum by 3 or 4 A.M.

Experiments into the causation of this diurnal variation.—Assuming it, then, to be a fact that the opsonic index of the blood to various organisms rises during the day and falls during the night, the question arises as to the causation of this. The digestion of a meal is said to result in a tidal increase and decrease of the alkalinity of the blood, owing to the secretion of hydrochloric acid during digestion in the stomach and of alkalies during digestion in the duodenum. Exercise is said to result in decrease in the alkalinity of the blood owing to the formation of acids by the muscle metabolism. Observations were made to see whether an alteration either in the way of increase or decrease in the alkalinity of the serum had any influence upon the opsonic index. The normal alkalinity of the blood is between N/25 and N/30, say N/28. To one volume of blood serum were accordingly added (1) one volume of distilled water giving an alkalinity of N/56, (2) one volume of N/28 caustic soda giving an alkalinity of N/28, and (3) one volume of N/56 hydrochloric acid = N/112. These diluted sera were then used as if they were normal sera and comparison was made of their opsonic power, with the result (counts are numbers of organisms in 50 cells):—

TABLE VI.

Date.	Serum.	Alkalinity. N/28	Alkalinity. N/56	Alkalinity. N/112
		Index.	Index.	Index.
8/6/06	1	71 = 1	47 = 0·66	66 = 0·93
—	2	36 = 1	68 = 1·89	53 = 1·75
12/6/06	1	675 = 1	641 = 0·95	462 = 0·68
16/6/06	1	134 = 1	174 = 1·30	200 = 1·49
—	2	176 = 1	169 = 0·96	190 = 1·14
—	3	139 = 1	189 = 1·35	138 = 1·00
		6·00	7·11	6·99

It will be seen that no constant effect was produced; it would, however, appear that a reduction in the alkalinity of the blood serum has a slight effect in raising the opsonic index. This is in accord with the findings of Hektoen and Ruediger[16] that sodium bicarbonate among chemical bodies is a non-specific anti-opsonin. Lactic acid, again, is another such body; it may therefore be assumed that the accumulation of lactic acid in the body, as occurs during excessive muscular fatigue, will also conduce to infection. So well equipped is the human body with means to cope with disturbances in any of its functions that it is obvious that only when these disturbances are unusually great will the protective mechanism be broken down and predisposition to infection be established.

(To be continued.)

A CASE OF LICHEN PLANO-PILARIS IN WHICH THE SPINOUS ELEMENT PREDOMINATED.

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AT the end of April, 1908, a married woman, aged 30 years, consulted me at St. John's Hospital for Skin Diseases, Leicester-square, concerning an eruption which she first noticed about six weeks previously. She had two children, five and two years old respectively. The patient considered herself to be a healthy woman, but had recently felt unusually fatigued and nervous.

Family history.—The patient's mother had died from consumption at the age of 34 years. There was nothing further

[16] Journal of the American Medical Association, May, 1906.

of importance in the family history. Her father, three sisters, and one brother were alive and well.

History of eruption.—In the middle of March—i.e., six weeks before the first consultation—the patient had observed tiny elevations, grey and rough to the touch, on the outer aspects of both thighs, but especially marked on the right thigh. These had increased in number and a week or two later a redness had spread between the lesions on the right thigh. This redness was accompanied by itching. About the beginning of April groups of similar grey rough elevations had begun to appear on the chest and abdomen. Towards the end of April she had observed a few red spots on the right forearm of a quite different nature to the other parts of the eruption. This had so alarmed her that she decided to seek advice.

Appearance of eruption when first seen at the end of April.—An eruption was present on the outer aspects of both thighs, very marked on the right side; a few patches were present on the chest, abdomen, and slightly on the back of the neck and on the right arm near the elbow. The eruption presented three totally distinct clinical appearances:—

1. The eruption had commenced on the outer side of the right thigh, and in that situation there was an irregular dark-red patch over 4 inches long and between 2 and 3 inches broad. It was thickened and infiltrated; the red surface was not burnished. The patch was thickly covered with grey spines which protruded ¼th inch from the widened orifices of the hair follicles. They could be picked out, being hard, grey, and horny, and left a gaping depression. In the neighbourhood of the patch were discrete smaller horny spines without intervening redness, and these were said to be of very recent origin. A section was taken from the middle of this patch (Section 1).

2. On the right arm near the elbow were four distinct small papules of lichen planus. They had the typical waxy, flattened, polygonal papules of that disease. A section was taken from one of them.

3. On the chest, neck, and abdomen were several groups of grey horny spines without any surrounding papular elevation or redness. Each group was of about the size of a threepenny-bit. There were no intervening redness and no itching. The spines could be picked out with the forceps with but little difficulty, and left a small depression behind. Some of the smaller ones resembled an exaggerated keratosis pilaris. No section was taken at this time (April).

Subsequent progress.—Simple emollient treatment consisting of lard and linseed oil with 20 grains of calamine to the ounce was applied externally. A digestive mixture was taken by the mouth. In the middle of June, after six weeks of such treatment, the condition was as follows: (1) The spines on the thigh had become diminished in size but the infiltrated redness had improved but little; (2) on the right and left arms many new papules of lichen planus had appeared; and (3) on the chest and abdomen the spines were shorter, but around most of them a degree of congestion had appeared, and in a few groups this redness had spread over the entire patch. Coincident with the appearance of this redness there was a marked degree of itching. New groups of grey horny spines without redness had also appeared on the trunk, the individual lesions resembling to the eye an exaggerated keratosis pilaris. A section was taken from a group on the chest which seemed to be progressing with congestion (Section 2). As the disease appeared to be progressing the treatment was altered. Salicylic ointment was given externally, and internally a mixture containing phosphoric acid and strychnine. I had noticed in certain cases of lichen planus that phosphoric acid had done good when the usually recommended remedies had failed. The result was equally remarkable in this case. 1. The infiltration of the thigh rapidly diminished and after three weeks the horny spines ceased to protrude. 2. No new lichen planus papules appeared on the arms; those already present gradually faded away. 3. No fresh spinous lesions appeared on the chest or other parts of the trunk, and the redness between the spines began to fade within a week.

By Sept. 1st (1) the infiltration had quite disappeared from the thick patch on the thigh, and it only presented a pigmented appearance. No spines could be found on it. Scattered over the legs were a few discrete papules like keratosis pilaris; the patient admitted having paid no attention to these and had not applied any ointment to them. 2. The lichen planus papules on the arms had entirely disappeared. 3. On the trunk all the groups of papules had so greatly improved that they had the appearance of groups of comedones; the blackened summits of many of them increased this resemblance. On picking up the skin between the finger and thumb and squeezing it firmly the contents of these follicles were easily extruded. In June these horny cores had been too adherent to the follicular walls to be squeezed out, and when picked out with forceps they had appeared dirty grey, hard, and opaque. In September the cores were bright, greyish-white in colour; when rubbed between the fingers they were resistant and did not flatten into a sticky mass as does sebaceous material obtained from comedones. Under the microscope these cores were found to consist of lamellæ of horny material with a central downy hair.

Histological appearances.—Section 1 (Fig. 1) was excised from the infiltrated patch on the thigh at the end of April at the first consultation and showed the typical histological

FIG. 1.

Section taken from patch on the thigh.

appearances of a patch of lichen planus—namely, the horny layer thickened, the stratum granulosum unduly marked, the hyaline alteration of the rete, and the flattened papillary processes, due to the presence of the continuous band of small-celled infiltration in the papillary body. These changes involved the hair follicles also. They were widely distended with increased horny layer, a mononucleated infiltration was present immediately beneath the epithelium, and a slight degree of œdema was evident near some of the follicles between the epithelium and the cutis. The swollen hyaline alteration of the follicular epithelium was as marked as in the neighbouring epithelium of the lichen patch between the follicles.

Section 2 was taken in June from the chest. The group of spiny processes from which the section was taken had been under observation for two months and was showing

FIG. 2.

Section taken from patch on the chest.

signs of progression—that is to say, a rosy tint was beginning to spread between the spines, and some of the spines were the central point of a small congested papule. A large number

of sections were cut from the excised portion of skin, so that the microscopic appearances could be observed both where the follicles were chiefly involved and where the intervening skin showed the slight degree of congestion above mentioned between the follicles. The photograph here reproduced (Fig. 2) shows one of the sections through a congested area of skin. A typical small early papule of lichen planus is seen, exhibiting the increased horny layer, marked stratum granulosum, (?) commencing hyaline change of the epithelium, obliterated interpapillary processes, and the underlying œdema and mononucleated infiltration of the papillary body. The clinical appearance of the part had not led one to expect any such histological appearance. On the left side of the section are two depressions which further sections proved to be follicles. Attention is called to the fact that these follicles are filled with lamellæ of horny material, and the epithelium otherwise exhibits the changes usually found in a flat papule of lichen ruber planus, having a marked stratum granulosum, swollen epithelial cells, œdema of the papillary body, and a degree of surrounding infiltration with small and large mononucleated cells. Another distended follicle in the same section, not shown in the illustration, exhibited no alteration in the epithelial cells and no surrounding infiltration. Further sections taken from the same patch revealed a different stage of the process. There were numerous follicles distended with horny material, and the intervening skin showed no trace of any lichen planus papules. In certain of the follicles there was at the blind end a degree of epithelial degeneration such as one finds associated with the flat lichen planus papules, but in certain other follicles which were equally distended with increased horny material there was no abnormal alteration of the deeper epithelial layers. Mononuclear-celled infiltration was present only around a few of the follicles and only at the lower blind end. The blood-vessels of the cutis in the vicinity of the follicles were somewhat dilated. There was no polynuclear cell infiltration either around the follicles or the blood-vessels.

Summary of case.—The interest of the case lies in the fact that it presented so many totally distinct clinical lesions at the same time, and that these were observed from week to week in process of development and again of retrogression. 1. There was a clear history that the advanced lesion on the thigh had started as groups of grey spinous lesions similar to those of later origin observed on the chest. 2. The lesions on the arm were seen to start as small papules of lichen planus without any spinous or follicular lesion either at the beginning or at any stage of their growth and final progress to complete recovery. 3. During the six weeks after the end of April the disease progressed; a pink tinge was seen gradually developing around the mouths of the groups of follicles from which horny spines protruded, and also in some parts of the intervening skin. When a new form of treatment was instituted in June the disease ceased to progress; the rosiness gradually faded away before the pinkness had acquired any clinical appearances of a lichen planus papule, but the microscope revealed that the congestion between the follicles was in reality an early stage of lichen planus. (Fig. 2.) Without the form of treatment started in June the lesions on the chest would undoubtedly have undergone the same change as had occurred in the thigh, where there was a large patch of chronic lichen planus studded with prominent and thick grey spines. It is also a matter of interest that at no time and in no position was there seen an acuminate papule of lichen planus, such as is sometimes seen in cases of widespread lichen planus—i.e., burnished papules, discrete, occurring in the position of a follicle, with a central raised point, and usually without marked spinous protrusion of the follicular contents. Except on the arms and neck the disease in this case started definitely as groups of separate horny spines protruding from the mouths of the hair follicles. This is not the case with the acuminate papules of lichen planus.

Remarks.—There has been much confusion of description and of diagnosis of cutaneous diseases which exhibit protruding spinous processes with or without surrounding congestion. The name lichen pilaris (*seu* spinulosus) has been given to the disease in which spinous processes protrude without any surrounding congestion, but the name lichen is in this connexion somewhat misleading. In the *British Journal of Dermatology* (1905) Dr. H. G. Adamson has made an exhaustive and able research into the history and literature of this subject. He points out that the spinous lesions without congestion occur in at least two recognised forms. 1. They may occur in children without any change in the general health, unaccompanied by itching, inflammation, or by any concurrent lesions of lichen planus. Dr. Adamson describes a case which had been under his care and the histology of the lesions. He found that the epithelium of the hair follicle and the papillary body showed none of the changes peculiar to lichen planus. The disease is extremely rare in this country and appears to be even more rare on the Continent and in America. In Unna's monumental work it is only briefly referred to under the name keratosis follicularis spinulosa. From the histological findings made by himself and those he was able to discover in the literature of the disease Dr. Adamson concludes that Unna's name more correctly describes the anatomy of the disease as it occurs in children. "The pathological process," he says, "is essentially a hyperkeratosis of the follicle, perifollicular inflammation is absent, or at any rate very little marked." The disease in its histology more closely resembles keratosis pilaris than lichen. In keratosis pilaris there is hyperkeratosis involving only the mouth of the hair follicle; in keratosis follicularis spinulosa the hyperkeratosis extends down into the follicle for at least two-thirds of its length. The epithelium reveals none of the changes peculiar to lichen planus. 2. Nevertheless it has been with some reason believed that this spinous lesion was in some way associated with lichen planus. In adults keratosis follicularis spinulosa has usually been associated at some time or other with papules of lichen planus. Dr. Adamson believes that Dr. J. J. Pringle was the first to notice this association and so early as 1895 to use the name lichen plano-pilaris to describe the condition. As a rule when lichen plano-pilaris is present in an adult there are also present numbers of acuminate papules of lichen planus—i.e., papules of an appearance similar to the flat papules of lichen, but acuminate in shape, having a central follicular plug and sometimes also a protruding spine. Dr. Adamson writes: "The spiny lesions in these latter cases are usually associated with the acuminate follicular lesions of lichen planus, and it is most probable that they have therefore merely an accidental association with a perifollicular disturbance ..... Such an hypothesis is made more probable by the fact that similar spines are occasionally associated with the follicular lesions of lichen scrofulosorum and miliary syphilide and also with those of pityriasis rubra pilaris."

In my case, on the contrary, the spinous lesions could not possibly be said to be secondary to the perifollicular disturbance. Both the clinical and the histological appearances pointed to the fact that the hyperkeratosis in the follicle was the primary occurrence and caused the prominent hard spine which existed for some weeks before any congested papule formed around it. The secondary feature was the papule, which presented the histological appearance of a marked hyperkeratosis follicularis spinulosa, associated with the epithelial changes also of lichen planus. In the same excised portion of skin there could be seen other follicles which showed no lichenous changes in the epithelium but only a hyperkeratosis within the follicle, and in some instances a slight perifollicular infiltration. Had the patient not been seen until June, when most of the spines had acquired their surrounding congestion, it is possible that a physician would have concluded that her disease consisted principally of acuminate papules of lichen planus in which the central spine was rather abnormally developed and that its presence was accidental and of secondary importance.

Harley-street, W.

HOSPITAL'S CHANGE OF NAME.—A special meeting of the governors of the Hertford General Infirmary was held on Oct. 22nd for the purpose of repealing some rules and adopting revised ones. The most important change made was in the name of the hospital. Mr. A. H. Smith, M.P., the chairman of the meeting, said that although the General Infirmary at Hertford had a time-honoured name it was thought advisable to alter it on two grounds. The first reason was that the word infirmary was also applied to the workhouse infirmary and often caused considerable confusion. The other reason was that an institution bearing the name of hospital had a higher status in the medical world than one which was called an infirmary. The new name decided upon was the "Hertford County Hospital."

THE STERILISATION OF POTABLE WATERS BY MEANS OF CALCIUM HYPOCHLORITE.

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At the present time I have under observation several important public water supplies which are invariably satisfactory from a chemical point of view but which from time to time contain bacillus coli in small numbers, indicating some slight pollution with water of an objectionable, if not dangerous, character. In some instances experiments made with fluorescein have enabled the source of the undesirable water to be discovered but in others efforts made to discover the source of pollution have failed. In certain of these cases an enormous expense would have to be incurred to obtain a safer source of supply, in others the available sources are just as likely to be contaminated as those at present in use. The problem of finding a means of purifying such waters has therefore engaged my attention for some time and as the result of prolonged investigations I had concluded that such waters could be purified either by treatment with metallic copper or with calcium hypochlorite. Copper, however, appears to have a selective action upon bacteria; it may destroy all the typhoid bacilli in a water yet not affect the bacteria of the coli group. Calcium hypochlorite, on the other hand, destroys both with equal ease.

When in Boston, Massachusetts, recently, my friend, Professor Sedgwick, directed my attention to some work which had been done by Dr. Phelps who is engaged in carrying out a long series of experiments for the city of Baltimore, having for their object the sterilisation of the effluent from bacteria beds before allowing it to enter Chesapeake Bay, where there are extensive oyster layings. Dr. Phelps kindly showed me these results which proved that a very small quantity of calcium hypochlorite was capable of producing sterilisation provided the effluent was fairly clear and free from easily oxidisable organic matter, and he hinted that such a method of purification was being considered for a public water-supply. Upon my return I resumed my experiments with calcium hypochlorite, using natural waters, to which the bacillus typhosus and bacillus coli were added, without at the same time introducing an abnormal quantity of organic matter. To my great surprise I then discovered that exceedingly minute quantities of this chemical sufficed for sterilisation—in most cases 1 part of chlorine as hypochlorite to 1 million of water being sufficient—and that the action took place in a very few minutes. By the addition of a little sodium bisulphite at the end of the time required for effecting the destruction of the bacteria the remaining chlorine can be removed and the palatability of the water remains unimpaired. Experiments of a varied character have been made with waters from divers sources, but the following will suffice as showing their scope and the results obtained.

1. To chalk water to which had been added five cubic centimetres of a clear sewage effluent to each litre hypochlorite equivalent to two milligrammes of available chlorine was added and the mixture allowed to stand for 30 minutes. The untreated water contained some thousands of bacteria per cubic centimetre and one cubic centimetre gave acid and gas with bile-salt glucose broth. The treated water caused no growth whatever in the same broth when ten cubic centimetres were added thereto.

2. To the same water was added a filtered dilute broth containing a growth of the typhoid bacillus and an equal quantity of a diluted bile-salt broth containing the bacillus coli. Chlorine in hypochlorite was added, two milligrammes per litre, and allowed to stand for one hour. The colonies from one cubic centimetre of untreated water on malachite green medium exceeded 3000, of which about half appeared to be the bacillus typhosus. Acid and gas were produced by 0·1 cubic centimetre in bile-salt broth. After treatment there was no growth whatever from one cubic centimetre upon the malachite green medium. Neither acid nor gas was produced by the treated water when one, five, ten, and 20 cubic centimetres were added to the bile-salt broth.

3. To water from a rainwater tank mixed with a dilute broth containing the bacillus coli was added chlorine in hypochlorite equivalent to two milligrammes per litre. The excess of hypochlorite was destroyed by sodium thiosulphate before applying bacterial tests. The results were as follows:—

	Min.	Mins.	Mins.	Mins.
Time of action...	1	... 10	... 20	... 30
Colonies from 1 cubic centimetre on agar in 24 hours ...	Thousands	... 3	... 4	... 1

Acid and gas were given by one cubic centimetre of the impure water in bile-salt glucose broth. Neither acid nor gas was produced by the pumped water with 36 cubic centimetres.

4. To ten litres of tap-water + 3 cubic centimetres of a fermenting bile-salt broth chlorine in hypochlorite was added, 1 milligramme per litre. This mixture gave acid and gas in bile-salt glucose broth when 0·1 cubic centimetre was added, and upon agar 1 cubic centimetre gave 3120 colonies in 24 hours.

	Minutes.	Minutes.	Minutes.
Time of action	10	20	30
Colonies from 1 cubic centimetre on agar	0	0	0

Neither acid nor gas was produced by 36 cubic centimetres of the treated water in bile-salt broth.

5. Repetition of using a soft rainwater instead of tap-water gave identical results. Apparently the water was absolutely sterilised.

6. Water from a well in the new red sandstone infected with bacillus coli. The untreated water gave 2880 colonies on agar plate from 1 cubic centimetre. Acid and gas were produced in bile-salt broth from 0·1 cubic centimetre.

Chlorine in hypochlorite per litre of water.	Duration of action.				
	1 minute.	6 minutes.	12 minutes.	18 minutes.	24 minutes.
0·5 milligramme.	+	+	+	+	+
0·75 ,,	+	+	+	+	–
1·0 ,,	+	–	–	–	–

The 1 milligramme Cl per litre water at the end of five minutes gave acid but no gas when 20 cubic centimetres were added to bile-salt broth. After 24 minutes there was no growth whatever, neither acid nor gas being produced from 20 cubic centimetres.

In all these and many other experiments the amount of chlorine (available) in the water was determined. Some failures which occurred in the earlier experiments were found to be due to the fact that the organic matter added had absorbed all the available chlorine, leaving none to act upon the bacteria. As a rule about half the chlorine was used up. In passing it may be remarked that the quantity of chlorine destroyed by a water appears to be a good index of its quality, and experiments bearing upon this point are being undertaken.

From inquiries made at chemical works I find that calcium hypochlorite containing 33 per cent. of available chlorine can be delivered at £15 per ton and sodium bisulphite at £16 per ton. The waters which use up very little chlorine can be sterilised by the use of 3 parts of hypochlorite (= to 1 part of available chlorine) per million, or 30 pounds of hypochlorite per million gallons. The cost, therefore, works out as under: hypochlorite, 4*s.* 5*d.*; bisulphite, 1*s.* 2*d.*; total, 5*s.* 7*d.* per million gallons; or 15,000 gallons for 1*d.*, or 0·067*d.* per 1000 gallons. Waters containing organic matter, such as peaty moorland waters, could probably be sterilised for less than 10*s.* per million gallons.

Further experiments with natural waters from divers sources are being made, but so far no water has been met with which two parts of chlorine per million failed to sterilise. The amount of chemicals added is so small that they do not affect in any way the character of the water. The chlorine and hardness are only increased by a minute fraction of a grain or degree per gallon. There should be no practical difficulty in adding the chemicals and no special apparatus would be required. The hypochlorite would be added as the water entered a tank

of suitable capacity, and the bisulphite as it left the tank to flow into the storage or service reservoir. Assuming that on the large scale the same results can be obtained as in the laboratory, and there appears to be no reason why such should not be the case, the adoption of such a method of water purification may result in an enormous saving in capital expenditure and very greatly reduce the risk of water-borne epidemics.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

HERPES ZOSTER FRONTALIS ASSOCIATED WITH GLAUCOMA.

BY A. A. BRADBURNE, F.R.C.S. EDIN.

THE chief feature which is generally relied upon to distinguish glaucoma from iritis is the size of the pupil. A recently published work says: "In glaucoma there is increased tension. In iritis the tension is usually normal, but for those who cannot rely on their estimation of tension there are other valuable points on which to base the diagnosis ..... it is the pupil which will in most cases give us the necessary clue. In glaucoma the pupil is dilated—often pear-shaped. In iritis the pupil is contracted." Glaucoma can, however, be associated with a *contracted* pupil when the iris is fastened down to the lens capsule behind, thus shutting off the posterior from the anterior chamber of the eye. The recognition of such an atypical condition is easy if one be careful to note the plane of the iris which will be either that of the underlying lens, to which it is completely attached, or else ballooned out (iris bombé) by pressure of the aqueous behind it, the edge of the pupil by its attachment to the lens giving the pupil a characteristically cupped appearance.

The interesting feature of this case is the fact that although there was undoubted increase of ocular pressure the pupil was *not dilated;* such a combination of symptoms is quite compatible with an iritis in which the plus tension is due to congestion and swelling of the iris and increased viscosity of the aqueous fluid. What made the case still simulate iritis was the marked swelling of the upper lid and the accompanying intense conjunctival injection; in fact, a superficial preliminary examination presented a typical picture of iritis, and had not the eye been most carefully scrutinised the instillation of a mydriatic would have seemed urgently necessary. On account of the œdema of the upper lid making recognition of increased intra-ocular tension difficult, this feature, contra-indicating the use of a pupil-dilating agent, could easily have been overlooked. Had, therefore, a mydriatic been instilled, as symptoms seemed to call for, a most unfortunate result would assuredly have followed. The cultivation of a faculty for observing minutiæ of detail is the secret of making correct diagnosis in eye affections. Now, not only had Dr. Weldon C. Carter correctly estimated the presence of increased tension, but had further noted that there was an *absence of the rose-red ring of ciliary injection* around the corneo-scleral margin which is always present in inflammation of the iris and ciliary body. He had also noted that the cornea was clear and bright and the iris markings were not obscured, and the pupil was fairly mobile. It was plainly evident, then, that a combination of signs was present which were contradictory in character, and for this reason desired my opinion to help to solve the problem.

The patient was a single woman, aged 53 years, the subject of rheumatoid arthritis attacking mainly the ankle- and shoulder-joints. Her skin was hot and dry, the tongue was furred, and the left side of the face and head was dusky-red and congested. For three days she had been suffering from a most intense pain radiating from the left eye over the forehead, the left side of the nose, and face. As already stated, the upper lid was considerably swollen and in a condition of partial ptosis. The conjunctiva lining the eyelids was congested and to a certain extent the ocular portion as well. Some thin transparent mucus was present as well as profuse lacrymation, and the eye was very sensitive to light and even to the slightest touch. The pupil was four millimetres in diameter, not perfectly circular, and moved under light stimulus. The colour and markings of the iris were unaltered, the cornea reflected brightly, and the media were perfectly clear. The anterior chamber was shallow, and gentle careful palpation revealed increased tension. Some recession of the optic nerve head could be seen, but was not in the condition associated with the later stages of glaucoma. The temperature and pulse were normal. There was another symptom which was out of all proportion to the objective signs, and this was the severity of the pain, its intensity being such as is usually associated with an attack of *acute* glaucoma. The clearness of the cornea, the absence of dusky venous engorgement of the ocular conjunctiva, as well as the absence of extreme hardness of the eyeball negatived a diagnosis of acute glaucoma. Against the case being iritis was the mobility of the pupil, the clearness of the texture of the iris, and the absence of ciliary injection. It was evident, then, that the increase of tension was only a secondary manifestation of a cause which had not so far revealed itself. When the patient first consulted Dr. Carter complaining of the severe pain in and around the orbit, he considered the probability of herpes zoster and kept this probability in view until the development of the eye affection led him to weigh the possibility that the cause might arise from the eye itself. 24 hours after my seeing the patient a crop of vesicles developed on the forehead, which at once revealed the true nature of the affection.

During the course of the disease a change came over the condition of the eye which entailed the necessity for a second consultation. This time the eye was found to be free from pain, photophobia, and sensitiveness to touch. The tension was subnormal, the anterior chamber deep, the pupil semi-dilated and immobile, and the texture of the iris was partially obscured. The explanation of these altered appearances was simple. There was evidently a thin viscid but transparent mucoid secretion present in the aqueous which accounted for the loss of transparency of the media and obscured the texture of the iris. The minus tension could be attributed to the defective secretory function of the ciliary body due to the paralysing effect of the affection on the long ciliary nerves. These symptoms indicated the urgent necessity of preventing adhesions forming between the iris and the lens capsule which the viscid mucus in the anterior chamber of the eye tended to produce. The use therefore of a mydriatic was obviously required now as much as it was contra-indicated in the early condition and under this treatment the eye rapidly recovered.

The case is considered worthy of record if only on account of the manner in which it indicates the importance of observing the minutest details and correctly gauging their true indications and how it is possible for the so-called classical symptoms at times to become absolutely misleading.

Southport.

A CASE OF INTERNAL HÆMORRHAGE CONSEQUENT UPON TUBAL GESTATION WITH UNUSUALLY EARLY SYMPTOMS.

BY JAMES OLIVER, M.D. EDIN., F.R.S. EDIN.
PHYSICIAN TO THE HOSPITAL FOR WOMEN, SOHO-SQUARE, W.

THE patient, aged 27 years and married six years, consulted me on Sept. 30th last. She had had one child but no miscarriage; the child was born five years ago. When I saw her she had had during the previous three weeks a constant hæmorrhagic discharge from the vagina. When this hæmorrhagic discharge made its appearance the patient affirmed that it was the correct time for her being unwell and that she had menstruated as usual four weeks previously. Five weeks before coming under my observation—about two weeks after the last normal menstrual period—she was suddenly seized with severe pain in the right iliac region. This attack lasted altogether about one hour; it was not attended or followed by any hæmorrhagic discharge from the vagina. 14 days after the first attack the patient experienced a second and similar attack of pain and on this occasion the external hæmorrhage made its appearance. During the three weeks that there has been external hæmorrhage there have been three similar attacks of pain; the last attack was on the day preceding her

visit to me. She complained of no bladder or rectal symptom. With regard to the physical signs, palpation of the abdomen revealed nothing, but the patient kept her abdominal wall rather rigid. The cervix uteri was rather low and was located towards the left wall of the pelvis. The body of the uterus could not be differentiated. In Douglas's pouch and the right quarter of the pelvis was felt a small, firm, and rather convoluted swelling of the consistence of old blood clot.

Operation was performed on Oct. 5th. I opened the abdomen. There was free fluid blood in the general peritoneum which had escaped from the fimbriated extremity of the right tube. The distal end of the right Fallopian tube was the seat of the gestation sac.

Gordon-square, W.C.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

PATHOLOGICAL SECTION.

Action of Splenotoxic and Hæmolytic Sera.—Idiopathic Dilatation of the Bladder.—Mode of Action of Gastrotoxic Serum and the Healing of Gastrotoxic Ulcers.

A MEETING of this section was held on Nov. 17th, Mr. S. G. SHATTOCK, the President, being in the chair.

Mr. L. S. DUDGEON, Dr. P. N. PANTON, and Dr. E. A. ROSS communicated a paper on the Action of Splenotoxic and Hæmolytic Sera on the Blood and Tissues. Their experiments were undertaken for the purpose of determining whether it would be possible to produce a splenotoxic serum possessing specific properties, or whether the action of the serum would be on the lymphoid tissue in general, or whether the results obtained were due to the hæmolytic property of the serum. The investigation was further extended to the action of the splenotoxic and hæmolytic sera on the blood and tissue with special reference to the production of fatty degeneration, cell necrosis, and the formation of "hæmolymph glands." They immunised three series of rabbits: (1) with splenic extracts; (2) with unwashed blood corpuscles; and (3) with washed corpuscles obtained from guinea-pigs. The immune sera when injected into guinea-pigs gave results which might be regarded as almost identical, the only difference being that the hæmolytic sera were usually slightly more potent. Another series of rabbits were inoculated with the unwashed blood corpuscles of cats and splenic extracts freed from blood by an elaborate process of washing. The effects resulting from the injection of the splenotoxic and hæmolytic sera were as a rule the death of the animal within 24 hours with small hæmorrhages chiefly into the peritoneum and mesentery, marked swelling and congestion of the spleen, the colour of which was almost jet black, while the remaining viscera were abnormally pallid. In the mesentery dark red glands were found and occasionally similar glands were met with in the groin. The immune sera thus obtained produced changes in the tissues of animals of almost similar character, only they were more pronounced. The fat was of a primrose yellow colour and the viscera and conjunctivæ had a marked "icteroid" tinge. The urine contained a large amount of blood and albumin but no casts and the urine and blood serum were free from bile pigment. The chief microscopical changes consisted of enormous distension of the sinuses of the spleen with red blood corpuscles at the expense of the lymphoid tissue, leaving the Malpighian corpuscles comparatively unaltered and inducing in the endothelial cells a high degree of phagocytosis for erythrocytes and blood pigment. In the affected lymph glands similar histological appearances to those observed in the spleen, that is to say, so-called hæmolymph glands, were noted. There was widespread necrosis of epithelial cells, particularly in the liver and kidney, and extreme fatty degeneration occurred in the same viscera, but, unlike diphtheritic toxin, spared the heart muscle and diaphragm. When the immune serum was heated or saturated with suitable red cells in vitro the final results obtained were similar to those produced by the untreated serum. With the immune serum obtained from one specimen of animal by inoculating with the tissues of another species and then injected into a third species no abnormal effect was produced.

The PRESIDENT exhibited a Dilated and Hypertrophied Bladder with Double Hydronephrosis from a man who had never suffered from any urinary symptoms, in whom there was no enlargement of any part of the prostate, and whose urethra admitted the passage of a catheter without difficulty. He used the term idiopathic in the way in which it was used in the case of the colon, œsophagus, or stomach, in which similar dilatation and hypertrophy occurred; and of these conditions he gave different tentative explanations. In the case of the pelvic colon the dilatation usually commenced shortly after birth. It was a significant fact that in the case of the bladder dilatation without recognisable cause had also been observed in infancy and in the newly born child, one excellent example of the latter being in the Museum of the Royal College of Surgeons of England. The dilatation might be due to incoördination between the contraction of the detrusor and the dilatation of the sphincter; and there was the theoretical possibility, also, of a hypoæsthetic state of the mucosa whereby the reflex of micturition would not arise until the viscus had reached what in normal circumstances would be an abnormal degree of fulness. Experiments made by Dr. T. G. Brodie and himself showed that in the cat, if the vesical mucosa was anæsthetised by means of cocaine, on the bladder being filled with warm salt solution micturition was abolished, the organ becoming markedly distended. This result indicated that the reflex of micturition was initiated by the tension of the vesical mucosa—i.e., the contraction of the detrusor and the associated dilatation of the sphincter. Whether anæsthesia or hypoæsthesia of mucous membranes occurred as a hysterical phenomenon was a subject that would repay investigation.

Dr. CHARLES BOLTON read a paper on the Mode of Action of Gastrotoxic Serum and the Healing of Gastrotoxic Ulcers. He said that the gastrotoxic serum referred to was prepared by immunising the rabbit with guinea-pig's gastric cells. The action of the serum was manifested in two directions: (1) by the production of general symptoms of intoxication; and (2) by the formation of patches of necrosis in the mucous membrane of the stomach which developed into ulcers. It was proved that the serum acted directly upon the gastric cells and not primarily upon the capillary wall leading to hæmorrhage, because if the gastric juice were neutralised with an alkali at the time that the serum was injected no lesions resulted. Neutralisation of the gastric juice would, of course, not prevent a hæmorrhage occurring. The actual necrosis of the mucous membrane was produced by the gastric juice, because no microscopic change could be seen in the cells when the gastric juice was put out of action. It appeared, therefore, that some pathological change was produced in the cells whereby they were rendered susceptible to digestion by the gastric juice. That pathological change was probably a devitalisation of the cell and not the removal of any specific resisting power possessed by the cells, because other poisons, hepatotoxin, enterotoxin, and hæmolysin, were able to produce an action on the gastric cells of precisely the same nature only to a much less extent. Those two observations, the initiation of self-digestion resulting from the circulation of a poison in the blood and the non-specificity of the poison, were considered of great importance because they raised the question whether there might not be many endogenous and also exogenous poisons (bacterial or otherwise) which by their action on the gastric cells could bring about self-digestion. It was shown that certain protoplasmic poisons in solutions, which were of themselves inert, were able to increase the lesions produced by gastrotoxin if they were introduced into the stomach when the latter was injected into the animal. Such solutions were hydrochloric acid above 0·3 per cent., sulphuric acid above 0·5, acetic acid above 0·5, and lactic acid above 2 per cent. It was therefore considered probable that hyperacidity of the gastric juice or the taking of inert solutions of certain substances by the mouth (e.g., vinegar) could in the presence of a devitalising agent in the blood bring about self-digestion. The gastric lesions produced by hepatotoxin, enterotoxin, and hæmolysin were shown to be increased by the acids also. It was considered that no cytotoxin was specific, each acting especially upon the cells against which

it was formed and also as a general protoplasmic poison. In order to study the healing of gastrotoxic ulcers the ulcers were produced by local injection of the serum into the stomach wall, as by that means an ulcer could be produced without toxic symptoms. It was found that such ulcers healed completely in normal animals in from 14 to 28 days. Repeated injection of the serum did not lead to chronic ulceration, as the animals became immune to it. The position of the ulcer in the stomach did not affect the healing. Hyperacidity of the gastric contents and diminished acidity did not retard the healing and so produce a chronic ulcer.

CLINICAL SECTION.

Exhibition of Cases.

A MEETING of this section was held on Nov. 13th, Sir THOMAS BARLOW, the President, being in the chair.

The PRESIDENT in a sympathetic reference to the death of Dr. J. G. Glover said that all who knew him would unite in an expression of sincere regret at the loss which the section had suffered by his death.

Dr. J. F. GORDON DILL showed a case of Pernicious Anæmia treated by Lactobacillin. The patient was a man, aged 34 years, who had diarrhœa in South Africa in 1901. Since then he had worked at house painting and plastering, until July, 1905, when he was suddenly seized with violent abdominal pain and diarrhœa; persistent vomiting appeared three days later, and these severe symptoms lasted seven weeks. During 1906 and the early months of 1907 he never lost the vomiting or diarrhœa, the motions averaging eight a day. Gradually dyspnœa and palpitation came on. He was admitted to hospital on Oct. 10th, 1907, with tenderness over the colon and extreme anæmia. The stools contained enormous numbers of streptococcus fæcalis and bacillus enteritidis (Gärtner). A blood count on Oct. 12th showed: red blood corpuscles, 1,468,000; leucocytes, 3500 (polymorphonuclears 48 per cent., lymphocytes 52 per cent.); hæmoglobin, 32 per cent.; and colour index, 1·1. Some of the red cells showed punctate basophilia, and in later examinations many nucleated red cells were seen, megaloblasts being noted in three out of 20 examinations. For four months (October, 1907, to January, 1908) he was treated with arsenic and intestinal antiseptics; he also had vaccines made from streptococci from the bowel and from the sore tongue. After this, on Jan. 23rd, 1908, the red cells were 1,568,000, leucocytes 3000, hæmoglobin 60, and colour index 1·8. He was put on lactobacillin from Jan. 14th to March 2nd; on March 19th the red cells were 1,725,000, the colour index 1·3, and leucocytes 1750. On April 3rd, after not having had any lactobacillin for a month, the red cells had fallen to 1,392,000 and colour index 1; he was put on lactobacillin. On April 23rd the red cells were 1,000,000 and colour index 1·8. From this date the blood condition gradually improved until Sept. 30th, when the red count was 4,800,000, leucocytes 6400, hæmoglobin 100 per cent., colour index 1·04, and no nucleated red cells. Except for the month of July he had been on lactobacillin since April 4th.—Dr. GEORGE HERSCHELL pointed out the importance of being sure that the lactic ferment used was active, as the market was sometimes flooded with preparations, some good, some useless, and some probably injurious. A tablet should conform to the following tests. It should be pure white in colour, should disintegrate within three or four minutes when placed in water, it should be odourless, neutral in reaction, and when cultivated on Cohendy's serum of milk should give a culture of the Bulgaria bacillus with perhaps one other organism added to improve the flavour of the milk curdled by it.—Dr. DILL, replying to the President, said that there were not any notes about urobilin in the case; and in answer to Mr. G. EASTES he said that the diarrhœa had been ameliorated. He admitted that many of the tablets on the market were inert, but with some he had had remarkable results in intestinal antisepsis.

Dr. F. PARKES WEBER showed a case of Congenital Heart Disease with extreme Secondary Polycythæmia and Orthostatic Albuminuria. The patient was a man, aged 22 years, who was undersized and did not look more than 15 or 16 years old. There was great cyanosis of the lips, tongue, nose, ears, hands, and feet. His tongue and lips were bluish-black in colour. There was great clubbing of the fingers and toes. A blood examination (capillary blood from finger) on Oct. 18th, 1908, showed that the blood was very dark in colour, hæmoglobin (by Haldane's method) 160 per cent., red cells 10,300,000 per cubic millimetre, and white cells 7000. A differential count of 500 white cells made by Dr. A. E. Boycott gave lymphocytes, 17·2 per cent.; intermediate, 5·4 per cent.; large hyaline, 2·2 per cent.; polymorphonuclear, 72·2 per cent.; eosinophile, 2·0 per cent.; and mast cells, 1·0 per cent. The red cells appeared quite normal though the colour index was low. The congenital malformation in the present case seemed to be patency of the interventricular septum.

Dr. C. H. MILLER showed a case of Polycythæmia. The patient was a man, aged 44 years, who in April, 1906, began to suffer from shortness of breath, palpitation, giddiness, and lately bad headaches and epistaxis. There were general cyanosis and great clubbing of the fingers and toes. A blood count gave the following result: red cells, 12,010,000 per cubic millimetre; white cells, 10,000; hæmoglobin, 140 per cent.; blood volume, 10¾ litres; oxygen capacity, 3·375 cubic centimetres (taken by Dr. Boycott). Improvement occurred when treated by rest, warmth, venesection, saline infusions, iodides, and arsenic.

Dr. MILLER also showed a case of Splenomegalic Polycythæmia. The patient was a man aged 39 years. His illness began at Christmas, 1906, with shortness of breath, pains in the chest and legs, and occasional bleeding from the gums. The legs were swollen. There was not any clubbing but there was great cyanosis of the lips, face, fingers, and toes. The spleen was enlarged and hard. There were 11,300,000 red blood corpuscles per cubic millimetre and 15,300 leucocytes per cubic millimetre; a differential count gave polymorphonuclears 81 per cent., lymphocytes 12 per cent., others 7 per cent.; no abnormal cells were found.

Dr. H. THEODORE THOMPSON showed a case of Polycythæmia. The patient during the last three years had been gradually becoming blue; he complained of headache and weakness. He had had syphilis many years ago and there was a scar of old gumma of the manubrium. The spleen was much enlarged and there was intense cyanosis. The red count varied from 10,000,000 to 13,000,000 per cubic millimetre; hæmoglobin, 140 per cent. The arterial, venous, and capillary blood pressures were normal. Treatment by iodides and oxygen inhalations was without any effect. The patient was now being treated with the x rays to the bones and spleen.—Dr. H. D. ROLLESTON suggested in these cases treatment with serum obtained from an animal in which a cytolytic action had been induced so as to affect the red marrow of the bones.—Dr. WEBER said that bleeding had been tried with doubtful results in some cases, and the PRESIDENT considered that it was a useful method of treatment when cerebral manifestations were present.

Dr. JAMES S. COLLIER showed a case of Chronic Purpura. The patient in July last, when suffering from septic gingivitis, developed a whitlow. The temperature rose to 104° F. and remained high for a week, and during this pyrexial period the most profuse purpura appeared, the body being almost universally black. Examination of the blood showed the presence of a few cocci only. The patient's general condition rapidly improved; he now felt in good health. Purpura had occurred almost daily since the beginning of his illness despite every kind of treatment, and frequently he was troubled with an urticarial rash, which was at once benefited by the administration of calcium chloride. The chronic œdema of the forehead suggested some septic focus in the nasal passages, but repeated examination had failed to reveal anything.

Mr. RAYMOND JOHNSON showed a case of Fracture of the Patella resulting from syphilitic osteitis.

Mr. A. CARLESS showed a case of Extensive Fracture of the Pelvis with recovery. The patient was a boy, aged 17 years, over whose sacrum a heavy van had passed.

Dr. F. E. FENTON showed a case of von Recklinghausen's Disease in a woman, aged 52 years, in which about 40 of the largest tumours (which varied from the size of a pea to that of a walnut or even an egg) had been excised, the pedunculated ones being ligatured. Fibrolysin had been injected hypodermically for the last ten weeks, with the result that the size of the tumours had diminished and their consistence had been rendered soft.—Dr. THOMPSON also showed a case of the same disease.—Dr. ROLLESTON said that a case of von Recklinghausen's disease should show neuro-fibromata, molluscous tumours, and pigmentation.—Dr. WEBER thought that the name should be given to a case with any of the

three symptoms, and the PRESIDENT considered that to deserve the name there must be an intimate relation between the nerves and the tumours.—Dr. FENTON, in reply, said that pigmentation appeared after the nodules had formed.

Mr. T. H. OPENSHAW showed a case of extreme Coxa Vara of the Left Leg, of traumatic origin. He also exhibited a case of Ununited Intracapsular Fracture of the Neck of the Femur, treated by screwing, with union. The patient could now stand on his right leg without pain and could walk all day long without fatigue.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

Cæsarean Section and Total Abdominal Hysterectomy.—Cancer of the Cervix Uteri.—Hysterectomy for Fibro-myoma of the Uterus.

A MEETING of this section was held on Nov. 12th, Dr. HERBERT R. SPENCER, the President, being in the chair.

The PRESIDENT read a short communication on Cæsarean Section and Total Abdominal Hysterectomy for retroflexion of the uterus at term by fibro-myoma adherent in Douglas's pouch. The patient was a primigravida, aged 38 years, and was admitted into University College Hospital. She was in labour and the pelvis was found to be occupied by a hard, fixed tumour of the size of the fist. On abdominal examination the lower part of the uterus was noticed to bulge forward to an unusual degree and appeared very thin. The child was removed by Cæsarean section but was found to be dead. The whole uterus and the tumour, which was fixed by adhesions, were removed by Doyen's method. The peritoneum was completely closed by a silk purse-string suture. The subsequent examination of the specimen showed that the uterus was retroflexed almost to a right angle, the angle of the canal being a sharp spur formed by the posterior wall at the internal os. The anterior wall had been greatly stretched and the lower segment was only seven millimetres thick. Retroflexion of the uterus at term produced by an adherent fibro-myoma was rare. Cases recorded by Herman and Varnier and Delbet were referred to. With regard to the diagnosis between adherent fibro-myoma and ovarian tumour, the presence of other tumours in the wall of the uterus would aid in the diagnosis, but the President was disposed to attach considerable value to the bulging and thinning of the lower segment as evidence that the tumour was a uterine fibroid and that the uterus was retroflexed. Cæsarean section followed by total abdominal hysterectomy was the treatment required.—Dr. W. RIVERS POLLOCK referred to a successful case of his own where he had performed Cæsarean hysterectomy for fibroids obstructing labour.—Dr. AMAND J. M. ROUTH congratulated the President on his treatment of this case.

Dr. C. E. PURSLOW read a short communication on a case of Cancer of the Cervix Uteri, with unusual microscopical appearances, in a patient, aged 21 years.

Mrs. M. A. D. SCHARLIEB read a paper entitled "Notes on a further 100 Cases of Hysterectomy for Fibro-myoma of the Uterus." The degenerations and complications were especially dealt with and illustrated by tables. At the end of the paper Mrs. Scharlieb pointed out that in this second hundred series of operations for fibroids none were done by the vaginal route. Pan-hysterectomy was done 42 times and she considered this the ideal operation.—Mr. ALBAN H. G. DORAN considered that this brilliant series showed that a patient might be relieved at very little risk of the mental distress caused by the presence of a uterine fibroid. At the same time he thought that many of the cases included in the tables were much too recent. Removal of a fibroid uterus was quite different from ovariotomy; an after-history of at least two years was necessary before the full benefits of the hysterectomy could be determined. He also regretted that the tables did not include a column noting the treatment of the ovaries, as well as a column for the after history, as in his own series brought before the Obstetrical Society just three years ago. His experience was identical with that of Lucas-Championnière who recently declared that an artificial menopause was a very grave matter and that year by year he spared more and more ovaries when performing hysterectomy.—Dr. AMAND ROUTH joined his congratulations to those of Mr. Doran and would merely criticise one point in Mrs. Scharlieb's paper. Would it not have been more correct to place the occurrence of carcinoma of the endometrium in the "Complication" rather than in the "Degeneration" column? Carcinoma uteri—whether of the body or cervix—was surely a complication and could not be grouped with necrobiosis, sloughing, or even with that variety of sarcoma which was truly a degenerative change. He noticed that Mrs. Scharlieb had not removed the cervix in the second case of carcinoma and fibroids (No. 152), but he presumed the cancer was not diagnosed till afterwards. As the patient was operated on in 1905 he would like to hear if recurrence had yet taken place.—The PRESIDENT and Dr. MACNAUGHTON-JONES also complimented Mrs. Scharlieb on the low rate of mortality in her series of cases.

MEDICAL SOCIETY OF LONDON.

Recurrence after the Operation for Radical Cure of Inguinal Hernia.—Two Cases of Hæmorrhage into the Testicle of Doubtful Origin.

A MEETING of this society was held on Nov. 23rd, Mr. C. B. LOCKWOOD, the President, being in the chair.

Mr. W. H. BATTLE read a paper on Recurrence after the Operation for Radical Cure of Inguinal Hernia. He said that there were 35 operations recorded in his case-books which had been performed for recurrent inguinal hernia, and of those 34 were required on male subjects and only one on a female patient. These were almost equally divided between the right and left sides. The general impression was that suppuration was the most frequent cause for the return of a hernia after attempted radical cure. In only four of these 35 operations was there clear evidence that suppuration had followed the original operation, in nine it was not possible to come to a conclusion on that point, whilst in 22 there was no doubt that primary union had been obtained. That was all the more noteworthy because all cases presenting the slightest trace of pus were put down under that heading, no matter how slight the amount, whether merely a stitch abscess or a more general suppuration. In a series of 107 recurrences after operation for hernia reported from St. Thomas's Hospital the cases in which it was recorded that there had been suppuration during the after-treatment only numbered 22. That hardly bore out the statement of Jacobson, "In nearly all the relapsed cases some suppuration had occurred and that was no doubt the main cause of the relapse." There was no doubt that suppuration sometimes acted disastrously by loosening or destroying perishable sutures and rendering others a source of continued irritation; still, most of them had probably seen instances in which a satisfactory result had been obtained in spite of their fears—the formation of a large amount of scar tissue binding the parts firmly together. If a hernia was going to relapse the return would take place within a few months of the date of the first operation. In the series of 35, the period of time varied considerably; in one it happened almost immediately, whilst it was found within 12 months in 16 patients, between one and two years in 11, and more than two years in the remainder—eight in number. In other words, it returned within 12 months in nearly half the cases. Inadequate operation might leave the patient exposed to the formation of another kind of hernia on the same side, and until a second operation was performed the nature of that hernia would not be known. Obliteration of the sac was undoubtedly an important part of the process of radical cure, and the peritoneum must be shut off smoothly at the internal ring, so that there was no pouching left into which omentum could force its way. He was of opinion that in some of the instances in which recurrence took place at an early date there had been a slipping of the ligature after the sac had been cut off, and that the omentum had found the weak spot and passed along the cord. The importance of the presence of the cord was fully recognised by operators, for all would admit that recurrence was hardly known in the female. In addition to the mere presence of the cord, which had a tendency to drag on the inner margin of the internal ring and acted as a guide to the descent of a peritoneal pouch, it was possible that during the application of the ligature, in the neck of the sac, some of the cord might be included in the ligature and that in replacement of parts before the suturing of the wall of the canal that attachment might be pulled upon and a small pouch formed from the very first. Or again, the dragging of the testis in normal movement of the body might bring that point down at a later

date. It might also be that the method of displacement of the sac rather than ligature of the sac (before its removal) had the effect of eliminating that cause. The additional sutures placed by some surgeons to close the space above the cord might also effect the same object. The effect of undue strain was undoubtedly considerable. How much trouble might arise from the vomiting which followed the use of anæsthetics it was not possible to estimate. At the end of a fortnight the patient could safely go about again and walk from place to place in moderation, but the muscular exertion which he underwent should be gradually increased and at no time violent. In most of the cases which had been operated on by himself, as well as in those which had been subjected to operation by other surgeons, there was an excess of scar tissue in the inguinal canal which in some instances matted the parts together in a manner which made it difficult to differentiate the structures. In three instances the posterior wall was so firmly fixed to the cord that Foster's operation was done—that is, the cord was not disturbed but the internal oblique was sutured to Poupart's ligament over it after removal of the sac, and the canal closed in the usual manner. As regards the condition of the sac, it was frequently difficult to separate, being thickened and adherent to the cord, but in every instance save one it was ultimately separated and ligatured before removal. The exception was made in a case of direct hernia where the sac presented no definite neck, and was invaginated without the removal of any part of it. In three the hernia had become irreducible, omentum being adherent to the inside of the sac. In two of these omentum required to be excised.—Mr. G. R. TURNER said that in operating for hernia he never let age stand in his way unless the age of the patient was such as to make the giving of the anæsthetic a danger.—Mr. A. E. BARKER pointed out the advantage of using silver wire net-work to support the parts when dealing with very indolent tissues.—The PRESIDENT commented on the diminution in the frequency of recurrence and Mr. BATTLE said he was unwilling to use silver-wire netting because he objected to put such a foreign body into the inguinal region where movement was so well marked.

Mr. V. WARREN LOW read a report on two cases of Hæmorrhage into the Testicle. In the first case the patient was a youth, aged 19 years, who went to the out-patient department of St. Mary's Hospital on April 19th, 1907. He complained that two days previously his left testicle had become swollen and painful. The case was considered to be one of tuberculous disease of the testicle and epididymis, and the removal of the organ was advised. That was carried out on May 7th. On section the body of the testis was firm and dry and had a uniform grey colour. In the region of the rete testis were several small ill-defined hæmorrhages. In the epididymis and cord were dilated blood-vessels but no hæmorrhages were here present and no indication of torsion of the cord. The second case was that of a young man, aged 21 years, who was sent to him in May, 1907, with the history that while moving he was seized in his left testicle with a sudden violent pain, of such severity as to cause him to lie on the floor. Mr. Low saw him on May 11th, about four weeks after the attack. The left testicle was then enlarged and slightly, but not excessively, tender. Mr. Low came to the conclusion that the case was one of tuberculous epididymitis and the organ was removed. On examination the body of the testis was firm and had a caseous appearance throughout and the epididymis and cord contained dilated blood-vessels. In the rete testis were thrombosed veins and blood clot almost completely discoloured. In each case there had been a sudden hæmorrhage into the substance of the testicle, with consequent destruction of its glandular elements, and in neither case was the cause of that hæmorrhage at all obvious. Sudden hæmorrhage into the testicle, when it was not an accompaniment of a new growth, was almost invariably the result of torsion, either of the cord or of the "mesentery" of the testicle. But in the cases which he had brought forward no evidence of such a twist could be discovered, and what was, perhaps, of more importance, the testicle and epididymis were normally attached to the back of the tunica vaginalis.—Mr. EDRED M. CORNER said that the trend of modern opinion in regard to these cases was to regard with doubt the ancient diagnoses of gangrene, spontaneous necrosis, thrombosis, &c., and it was now suggested that these cases were due to torsion of the cord, but he did not think that it accounted for all these cases.—Mr. T. H. KELLOCK said that it was important to know how high up the cord the hæmorrhage went.—Mr. BARKER narrated similar cases where he did not operate, and the PRESIDENT pointed out that the question arose where a hæmorrhage began, after which Mr. Low replied.

OPHTHALMOLOGICAL SOCIETY.

Orbital Abscess following Retinal Embolism.—Nodular Opacity of the Cornea in Three Generations.—Exhibition of Specimens.

A MEETING of this society was held on Nov. 12th, Mr. R. MARCUS GUNN, the President, being in the chair.

Dr. A. L. WHITEHEAD read a paper entitled "A Case of Orbital Abscess following Retinal Embolism." The patient, a woman, aged 42 years, after an illness of ten days' duration, with elevation of temperature and pain in the right shoulder, suddenly lost the sight in one eye. This eye subsequently became acutely inflamed and proptosed and an orbital abscess formed. The abscess was opened and the eye was excised; pus was found to be exuding through a necrosed area of sclerotic. The axillary vein subsequently became thrombosed and suppurated. The absence of any primary focus of suppuration and the presence of a systolic mitral bruit rendered the diagnosis of infective retinal embolism secondary to endarteritis probable.—Mr. J. H. PARSONS, in commenting on the case, drew attention to the importance of a bacteriological examination of the blood in such cases, and showed, by narrating cases, that the behaviour of the case varied greatly according to the particular organism responsible. There was also a strong selective factor as regards site in the case of various organisms.—Mr. ANGUS MACNAB pointed out that in many cases where the abscess contents were afterwards found to be sterile the pneumococcus was the organism responsible.—Dr. WHITEHEAD replied. The pus from the eye was sterile, while that from the abscess contained some diplococci.

Mr. HERBERT H. FOLKER read a paper on Nodular Opacity of the Cornea in Three Generations. 25 members of this family had been examined and the opacity was found in nine of them. In the first and second generations five were examined and nodular opacity was present in three members. In these cases, in addition to the opacities, fine lattice-like lines were found in conjunction with them. This latter condition was absent in members of the third generation. The nodular opacities were fewer in number and less in density in the younger members. In all the cases the opacities appeared to be situated in the anterior layers of the substantia propria, the epithelial layer not being involved. No signs of syphilis or history of rheumatism were present in any of the cases. He was indebted to Mr. George A. Carter of Tunstall, who first sent an affected member of the family to him and who had taken great pains in assisting to trace the various members of the family.—The PRESIDENT remarked on the large amount of work done by the society recently on the question of heredity. In only two cases had he seen nodular opacities of the cornea associated with raising of the epithelium.—Mr. G. COATS described the histology of a case which he had examined.—Mr. MACNAB remarked on the advantage which had accrued when he shaved the cornea.—Mr. J. HERBERT FISHER drew attention to some notes of a case of nodular keratitis which he showed three years ago.—Mr. W. T. HOLMES SPICER also described cases, and said that he had scraped from them material which was found to be hyaline with calcareous deposits in it.—Mr. R. W. DOYNE, Mr. SYDNEY STEPHENSON, Mr. N. BISHOP HARMAN, Mr. E. TREACHER COLLINS, Dr. W. S. INMAN, Major R. H. ELLIOT, I.M.S., Mr. E. NETTLESHIP, and others also joined in the discussion, and Mr. FOLKER replied.

The following card specimens were shown:—

Mr. R. R. JAMES: Birth Injury of Cornea.

Dr. WHITEHEAD: Specimen from a case of Irido-cyclitis followed by Perforation of the Sclerotic and Orbital Abscess.

Mr. STEPHENSON: Crateriform Hole in the Optic Disc.

Dr. RAYNER D. BATTEN: Acute Optic Neuritis in one Eye with Macular Changes in the other.

Mr. LESLIE J. PATON: Cataract developing subsequently to Exposure to the X Rays.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Baths and Mineral Waters.—Exhibition of Case.

A MEETING of this section was held on Nov. 6th, Dr. W. G. SMITH, the President, being in the chair.

The PRESIDENT gave an address on Baths and Mineral Waters, and some Fallacies connected Therewith. After some general remarks and a brief reference to radio-activity as a possible factor of efficiency, he drew attention to the chemical analyses of mineral waters and the misleading way in which the analytical figures were often expressed. Chemical analysis of a water should simply state the respective amounts of each acid, and basic radicle, i.e., of each ion, for no one knew or could tell how these were severally distributed as salts. The subjects of ionisation and of osmosis were touched upon. Did they know anything of the physiological action of pure water? Nothing whatever. Pure water was extremely difficult to prepare, and the modifying influence of even the slightest salinity was strikingly shown by observations of the electrical conductivity of water, which depended upon the ions present in solution. The purest water in nature was that from molten natural ice. But the purer the water was the more injurious was it to the tissues and hence the evil effects of drinking snow or glacier water. The essential factors of the external or local action of baths were two: (1) temperature; and (2) stimulation of the sensory surface of the skin. Soot baths, mud and peat baths were to ordinary waters what brown bread was to white bread; they tickled more. In explanation of the benefits which undoubtedly accrued to the crowds who flocked to baths and spas, reference was made to the late Mr. Ernest Hart's acute observations published in the *British Medical Journal* in 1887 and entitled "Spray from the Carlsbad Sprudel," and which were of general application. A Carlsbad (or other) "cure" was a very complex therapeutic agent. It was a rest cure, a diet cure, an air cure, a music cure, an exercise cure, a mind cure, and a body cure. There were very few forms of gastric, intestinal, renal, and nervous cases which were not capable of being benefited by such a treatment, even if that were not at all mineralised. In default of these pleasant and essential accessories it was vain to expect similar good results from waters alone if they were situated in places where these collateral advantages were denied by nature, by poverty, or by other adverse conditions.—Dr. JAMES LITTLE said that in selecting a mineral water for a patient the medical man had to consider the characteristics of the patient, the climate of the place to which he was going, the bathing and drinking facilities, and the social amenities of the place, and the medical practitioner under whose care the patient was going. He did not think that mineral waters did as much good nowadays as 50 years ago, because the patients of former times had realised incomes and could go away without any mental disturbance, but patients now worked up to 2 o'clock in the morning arranging their business, and then rushed off and drank more than they were ordered, and so got little benefit. A patient with organic disease who was sent to mineral waters had usually incalculable injury done to him, but if the disturbance was only functional real benefit would be derived. He thought that the reputation of many watering places depended on the ability of the local medical men.

Dr. P. DEMPSEY exhibited a case of Mycosis Fungoides in a man, aged 62 years, by occupation a small farmer. Up to five or six years ago he had enjoyed perfect health. There was nothing peculiar in his family history. At first a rash appeared on his back and remained for a year. It then invaded his chest and spread to his legs. It became indurated in places and was also scaly. One and a half years ago a small lump appeared on his shoulder and increased very much in superficial extent but not in height. Other lumps followed. Some disappeared spontaneously after a few months. The general health did not suffer, despite the extent of, and the irritation caused by, the disease, but the patient thought himself less able for hard work. The case was being treated with the x rays and had so far had four exposures.—The PRESIDENT said that the disease was extremely rare in Ireland. He had seen no case for ten years. The name "mycosis fungoides" had been introduced into the nomenclature by Alibert 100 years ago, and modern pathologists had not yet been able to give it a definite place.

BRISTOL MEDICO-CHIRURGICAL SOCIETY. — A meeting of this society was held on Nov. 11th, Dr. J. Michell Clarke, the President, being in the chair.—Dr. E. C. Williams showed a child, aged two years, who had recently recovered from Basic Meningitis with Temporary Amaurosis. During the course of the disease there had been complete loss of sensibility to light without any visible change in the ophthalmoscopic appearances. The case had markedly benefited from small doses of liquor morphinæ administered regularly. Recovery had left the child unable to walk or to talk, but the vision was apparently good. He regarded the case as an example of that form of posterior basic meningitis during the course of which the child appeared to lose his sight without any discoverable ophthalmoscopic change. The children at a later date often regained both their sight and health. They were usually below two years of age.—Mr. H. F. Mole, in discussing the case, suggested that possibly the child was deaf as the result of the meningitis and hence was unable to regain the lost art of speech.—Dr. Bertram M. H. Rogers said that his experience did not agree with that of Hutchison (previously cited) that about half of the cases of posterior basic meningitis made a more or less complete recovery.—Mr. Cyril H. Walker suggested that the amaurosis was due possibly to a retro-ocular neuritis; the loss of pupil reflex to light pointed to this conclusion.—Dr. F. H. Edgeworth referred to the treatment of this disease by serum, which had reduced the mortality in the Belfast epidemic 30 per cent., questioning whether the same serum would prove efficacious in the sporadic cases. The meningococcus in the two varieties, although morphologically and culturally identical, gave different agglutination and opsonic reactions, so that it was probable that the serum of the epidemic variety would fail with the sporadic. He had seen in three or four cases very good results from the morphine treatment advocated by Barr.—Professor I. Walker Hall thought that admirable as Flexner's serum had proved in some epidemics the correct plan to follow was that of preparing a serum from individual cases or epidemics wherever practicable.—Dr. P. Watson Williams showed a patient upon whom he had operated for Suppuration in the Frontal Sinus by the osteoplastic flap method. The result had been excellent not only from the point of view of relieving the symptoms but also as regards the cosmetic effect, the scar being barely visible.—Dr. J. Lacy Firth agreed that the operation was a very good one; he had found that it gave the best access to the ethmoidal region and left no deformity.—Mr. James Taylor read a paper on Some Fallacies in Skiagrams, which he illustrated by actual mistakes, showing how a fracture might escape notice completely if photographed in a single plane. Tuberculous masses in the kidney simulating calculi and other examples were shown.—Dr. James Swain insisted on the importance of such facts being published from the medico-legal aspect. He said that frequently the result of treatment of a fracture looked bad in a skiagram, while clinically no inconvenience was experienced.—Dr. Watson Williams emphasised the value of stereoscopic skiagram which cleared up many difficulties.—Dr. G. E. Bowker spoke of the misleading appearance of exostoses in some cases of suspected injury.—Mr. E. W. Hey Groves, referring to the transparency of callus, said that the patients might, by seeing a skiagram, be led to suppose that there was no union between the ends of a fractured bone.—Mr. A. L. Flemming said that during the South African war he had come to realise the value of stereoscopic skiagrams.—Dr. H. L. Ormerod read notes of a case of a Double Monster. In a full-time birth in a primipara, aged 25 years, the two embryos were joined by a broad isthmus from the manubrium sterni to the umbilicus (thoracopagus); their total weight was 11¾ pounds; the sex was female. When he arrived the mother had been in labour 18 hours, the waters had broken one hour previously, the pains were vigorous, and the abdomen was unduly prominent. The cervix was well dilated and the presentation was a third vertex; progress had come to a standstill. The head was delivered with forceps but the body would not follow. Vaginal examination revealed some abnormal prominence over the chest.

Without other assistance than that of the midwife he succeeded in bringing down the arms and subsequently the legs and breech; he then found that there was a second fœtus attached. He brought down the legs of the second child and had little difficulty in delivering the body and after-coming head. The monster died during delivery; the mother made an uninterrupted recovery, the perineum even having escaped laceration.—Mr. T. M. Carter read notes of a case of Rupture of Cerebral Aneurysm in a girl, aged 16 years; the early symptoms simulated hysteria. Death occurred in a few hours preceded by absolute coma. The necropsy revealed an extensive hæmorrhage at the base of the brain.—Mr. G. Munro Smith said that he had seen the patient in the earlier stages of her fatal seizure and had been misled into regarding the symptoms as hysterical.—Dr. J. R. Charles had seen her after she had become comatose and was led to diagnose cerebral hæmorrhage from the ophthalmoscopic appearances which revealed a very early stage of optic neuritis. He mentioned another case which he had seen where a similar condition was responsible for sudden death.—Professor Walker Hall described the post-mortem findings and showed direct colour photographs of microscopic sections from the dilated vessel which had burst; he was unable to say whether the vessel was an artery or vein. Apart from this lesion there were general hypoplasia of the cardio-vascular system and an abnormal fluidity of the blood which had only clotted round the ruptured vessel, but in no other part of the body.—Dr. Edgeworth said that while pathologist at the Royal Infirmary he had met with several cases of basal hæmorrhage in young adults in which, after careful examination, the source of hæmorrhage could not be found.—Dr. D. A. Alexander inquired whether there was any reason for supposing that Arthur Hallam's untimely death from a "determination of blood to the brain" was an instance of this condition.—The President remarked that the mistake of confounding such a case with hysteria would undoubtedly be made again. He asked whether there was any communication between the auricles or ventricles associated with the cardiac hypoplasia; also whether there was any ante-mortem clot which could have been dislodged and given rise to aneurysm in the brain.—The answer was in the negative to both these questions.

MIDLAND MEDICAL SOCIETY.—A meeting of this society was held on Nov. 18th, Professor Gilbert Barling, the President, being in the chair.—Mr. C. A. Leedham-Green showed a case illustrating the improvement which might take place in a Secondary Tuberculous Lesion of the Bladder when the primary focus had been removed. The patient was a young man who for six months prior to coming under observation had noticed that he was passing blood in his urine. On examination of the bladder with the cystoscope the blood was found to proceed from large tuberculous ulcers situated principally round the opening of the right ureter. After catheterisation of the ureters had shown that the other kidney was free from tubercle and was functioning well, the right one, which was wholly disorganised by tubercle, was removed. Almost from the day of the operation the patient's general health began to improve, as was evidenced by the rapid increase in weight. For several weeks after the nephrectomy the urine continued to show the presence of large quantities of blood, but as time went on the hæmorrhage gradually disappeared, until now, not six months from the time of operation, the urine is quite clear.—Dr. J. G. Emanuel showed a boy, aged 11 years, with a Small Pulsating Tumour in the Neck which he believed to be an aneurysm of a branch of the external carotid artery. The swelling was of the size of a hazel nut, pulsatile, and situated at the angle of the lower jaw in a line with the external carotid artery. It had been noticed for two years, and its appearance followed an attack of whooping-cough. There was no history of traumatism and there were no signs of endocarditis suggesting the possibility of an embolism having occurred. There was no evidence of congenital or acquired syphilis.—Mr. F. Victor Milward showed a child whose Spleen he had Excised at the age of 18 months. The child had made a satisfactory recovery and was in good health at the present time, seven months after the operation. A differential blood count showed a marked lymphocytosis.—Mr. L. P. Gamgee showed a specimen of a Large Enchondroma growing from the upper end of the fibula. The patient, a woman, aged 45 years, first noticed the enlargement 25 years ago, and the tumour had been growing steadily in size ever since. Until six months ago she had felt no pain in the part, but for the six months there had been a good deal of aching pain. When the patient was seen on Oct. 9th, 1908, the tumour was as large as an infant's head, bossy and irregular in outline, and of a uniform hardness. There was no adhesion of the skin and there were no signs of secondary deposits. On Oct. 16th amputation through the lower third of the femur was performed. On examination it was seen that the tumour had grown primarily from the upper end of the fibula and that it had pressed on and eroded the tibia secondarily. The upper end of the fibula, which was buried in the tumour, was greatly expanded as though the growth had in the first instance commenced in the interior of the bone; towards the surface of the growth were some patches of calcification. Microscopically the tumour had the structure of an enchondroma with a slightly fibrous matrix.—Dr. J. Miller showed a large series of Lungs of Infants cut entire and stained with Weigert's Elastic Tissue Method, illustrating various forms of pulmonary tuberculosis. Several of the sections showed cavity formation from small dilated bronchioles up to cavities occupying the whole upper lobes. In several instances the cavities were in the lower lobes, a condition found frequently in cases of abdominal tubercle.—Mr. George Heaton showed two specimens of Calculous Pyonephrosis in which a double ureter was present. The first was removed from a woman, aged 37 years, who had had symptoms of renal calculus on the left side for seven or eight years. The kidney was distended into a large multilocular pus sac. Primary lumbar nephrectomy was performed and the patient made a good recovery, and was now, 12 months after the operation, in excellent health. The upper half of the kidney was found to have a separate ureter which passed down separately from its fellow as far as it was exposed in the wound. The portion of the kidney drained by this upper ureter was comparatively healthy and contained no calculi. Preservation of any portion of the kidney was impossible at the operation, as the hæmorrhage was profuse from abnormal renal blood-vessels. The lesser half of the kidney was converted into a series of thin-walled pus sacs and contained four calculi. The second specimen was removed by lumbar nephrectomy from a woman, aged 30 years, who had a very large pyonephrosis on the left side extending from beneath the costal arch to the iliac fossa and considerably beyond the middle line laterally. The kidney was completely destroyed except for a small portion which lay between the pus sacs and the suprarenal gland and which after removal was found to have a separate ureter. This ureter was found to join the main one just beyond the pelvis of the kidney. The pyonephrosis contained one large branched calculus plugging up the mouth of the main ureter and a number of smaller calculi in the distended calyces. The patient made an excellent recovery.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Nov. 19th, Mr. T. H. Bickerton, the President, being in the chair.—Dr. Karl A. Grossmann in a note on Fibrolysin, after describing the composition of the drug, its properties, and effects on cicatricial tissues, mentioned the various medical and surgical diseases in which it was reported to have been used with good result. He then gave an account of ophthalmic cases in which he had employed it himself. Foremost amongst these was a case of severe burn of the eyelids. A thick dense scar had formed, preventing movement and causing the cornea to ulcerate. After treatment the lid opened and closed readily and its function became quite normal, so that only a small shortening of the lid remained. The patient was shown, with photographs before and after application of the drug.—Dr. Edgar Stevenson said that he had not used the drug owing to objections to its method of administration, but he had used thiosinamin for about ten years and considered it a most useful drug in the treatment of certain diseases and injuries of the eye.—Dr. R. J. M. Buchanan said that he had found fibrolysin of extreme value in a case of chronic sclerosis of the spinal cord of many years standing; under its use contractures and pain had been much relieved and ataxia lessened, and the power of walking had returned. He had found it useful in the treatment of non-tuberculous pleural adhesions and in one case of thick adhesions in the region of the gall-bladder associated with jaundice. He found that the drug had a direct local effect and if not injected deep enough under the skin would

produce punched-out sores. The note was also discussed by the President, Dr. F. W. B. Young, Dr. E. T. Davies, Dr. S. M. Whittaker, and Dr. J. Lloyd Roberts.—Mr. G. P. Newbolt read a paper on Suprapubic Prostatectomy. He advised operation in the following conditions: (1) complete retention and catheter life in otherwise healthy men; (2) frequent micturition rendering life unbearable and coming on at an early age; (3) profuse hæmorrhage from the prostate and recurring at frequent intervals; and (4) occasional retention with difficulty in the passage of, or inability to pass, a catheter. He did not advocate the operation in malignant disease. He considered that any after-trouble in the way of stricture was due to removal of the membranous urethra.—Mr. F. T. Paul considered that the operation was very remarkable in the results derived from it. In performing the operation he made as small a wound in the bladder as he could work with. He commenced enucleation within the neck of the bladder. If hæmorrhage occurred after the operation he removed the tube when, as a rule, the bleeding would stop. He never operated in cases where he considered the enlargement to be malignant.—Mr. W. Thelwall Thomas believed that the mortality would in the future be lessened by operating earlier in the condition. He always made a curved transverse incision and employed air distension of the bladder. Recently he had employed perineal drainage, as suggested by Lynn Thomas, and was very pleased with this improved method.—The paper was also discussed by the President, Dr. Davies, Mr. D. Douglas-Crawford, and Mr. R. A. Bickersteth.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on Nov. 13th. Mr. Edward Sergeant delivered his presidential address upon County Health Administration. After giving a short historical account of the evolution of the county medical officer of health, the President dealt with the various public health matters with which county councils are concerned. He described at some length the powers possessed by county councils with respect to the prevention of the pollution of rivers and pointed out that certain trade pollutions, such as those derived from dye, print, and bleach works, chemical works, tanneries, paper-making, woollen works, and silk works, were amenable to chemical and mechanical remedies which might be applied without interfering with manufacturing interests. He instanced the "Magma" process for recovering crude oil from the soap-suds used in dyeing operations and wool washing. In the indigo dyeing trade the spent vat liquors and wash waters after settlement gave a sludge containing so much indigo that it could be profitably re-used. In the manufacture of soap the spent lees were concentrated and distilled and the glycerine, which at one time was turned into the rivers, was now recovered. He considered that crude sewage should not be discharged into the open sea at low-water mark or into an estuary, more especially if the tidal currents were not sufficiently strong to remove or to dissipate the polluting matters without fear of their return. In the case of an estuary the sewage might be carried to sea very slowly and if discharged on the ebb tide might be carried only a short distance before it was driven back by the flood, and so oscillate backwards and forwards, causing a dangerous nuisance. Upon the vexed question of isolation hospital accommodation the President said that in his opinion a scarlet fever patient had a much better chance of recovery in an isolation hospital than in a cottage. He quite agreed that hospital isolation of scarlet fever patients had not quite answered the expectations that had been held out but he thought that no efficient sanitary authority could do without it. The non-removal policy had many attractions for parsimonious authorities, but he considered it wrong to endanger the health of neighbouring districts while engaged in the hopeless attempt to procure isolation in the ordinary dwellings of the working classes. In his remarks upon the administration of the Sale of Food and Drugs Acts he said that it was a grave reflection upon the Central Government that milk, the most important form of food so far as infants were concerned, should still continue to be subjected to frequent adulteration. The standard set up by the Board of Agriculture and Fisheries was, in his opinion, a good one, but its value was largely neutralised as it merely raised a presumption until the contrary was proved that the article was not genuine. He regretted that it was becoming increasingly difficult to obtain convictions in cases of alleged milk adulteration, and occasionally cases were dismissed by the magistrates even though no defence had been raised. In order to avoid such difficulties he considered that a fixed universal standard of genuineness should be adopted below which the sale of milk should be prohibited.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Nov. 20th, Dr. J. R. T. Conner, Vice-President, being in the chair.—Mr. Peter L. Daniel read a paper on the Treatment of Tuberculosis by Bier's Congestion and Hyperæmic Methods and by Injections of Iodoform Glycerine. He said that if they could mechanically obstruct the lymphatics and venules they were in possession of a valuable means of localising inflammatory processes and of thus protecting the whole body from invasion by bacteria and toxins, and "while limiting the process and protecting the body it permits nevertheless the whole body forces an opportunity to take part in the destruction of the germs." Iodoform glycerine acted in two ways: first, by mechanically obstructing the lymphatics; secondly, by inducing a hyperæmia—the reparative element of inflammation. By such obstruction to the lymph and venous flow a flooding of the diseased area with plasma took place, and however or wherever protective properties were manufactured in the living body they ultimately were conveyed by, and enabled to act through, the medium of the blood plasma; and as the arterial supply to the diseased area was quite unimpeded, this blood plasma charged with protective properties derived from the liver, spleen, marrow, and muscles permitted the whole body processes to be concentrated locally. By Bier's constricting bandage similar results were obtained in a more obvious manner, the essential point in this treatment being obstruction to the venous and lymphatic flow. Bier's methods consisted of (1) constriction by means of an elastic bandage; (2) suction by means of a suitable cupping glass; and (3) hot dry air. The constriction and suction produced lymphatic and venous congestion, but the hot air was said to induce an arterial hyperæmia. The constriction method, where it could be used, was the best method. The bandage used was made of elastic webbing, from 2 to 2½ inches wide; several turns of the bandage were made as far as convenient from the focus of disease until distinct fulness of the veins resulted. Such constriction must never be painful, or even uncomfortable; on the contrary, pain in the diseased area tended to be relieved and a sense of increased well-being resulted. Pallor and coldness beyond the bandage must never be produced, and if such result even after mild tension this should be evidence that the case was not suitable for constriction.—Dr. B. G. Morison showed a man with a Fracture of the Spine of the Scapula with two skiagrams.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 13th, Dr. W. H. Cheetham being in the chair.—Mr. A. S. F. Grünbaum made some remarks on the principles underlying the use of the various bacterial vaccines, pointing out that toxin bacteria usually required antitoxic serum and endotoxin bacteria generally required vaccine for the efficient treatment of their respective infections. He recommended prophylactic inoculation of individuals of tuberculous diathesis when young and before the appearance of any symptoms.—Dr. Myer Coplans made some remarks on Points in Comparative Pathology. He showed specimens of tuberculosis produced experimentally in the guinea-pig, comparing the *centripetal* progress of the disease with those forms found naturally in the pig, while contrasting the *centrifugal* progress of the disease in lactating cows in which involvement of the pre-lumbar and supramammary glands nearly always preceded the onset of tuberculous mastitis, which, when present, should be regarded as a sufficient warrant for the animal's destruction. Sections illustrating the pathology of Johne's disease (enteritis of cattle) were shown and described. Smears of pus showing the cryptococcus of Revolta were shown and the differential diagnosis between glanders of the horse and epizootic lymphangitis was discussed. Macroscopic and microscopic specimens of the anthrax purple reaction as applied to animals naturally dead from the septicæmic form of the disease were exhibited and the pathological and legal aspects of the reaction were noted.—Dr. E. F. Trevelyan and Mr. R. G. Hann showed the Viscera from a case of Acute Phosphorus Poisoning.—Mr. H. Littlewood showed: 1. A specimen removed

from a case of Pyonephrosis associated with Insanity. After the nephrectomy there was a rapid disappearance of the mental symptoms. 2. Tuberculous epididymitis from a patient aged 70 years. Many years before he had been tapped for ascites.—Mr. W. Thompson showed a Loose Body from the Peritoneum found in the Sac of an Umbilical Hernia. The body contained fæcal concretion.—Mr. Grünbaum showed a section of a Tumour from a case of Neoplastic Diathesis. It was remarkable in showing both carcinoma and sarcoma in close proximity to each other.—Dr. W. H. Maxwell Telling showed a specimen of a Small Traction Diverticulum of the Œsophagus which by perforation had caused gangrene of the lung, suppurative mediastinitis, and pericarditis.—Mr. J. F. Dobson showed a specimen of Endothelioma of the Submaxillary Gland.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on Nov. 11th, Dr. W. Milligan, the President, being in the chair.—Professor J. Lorrain Smith discussed the equivocal results which have been obtained in the attempt to study the pathogenic action of bacillus coli by means of (*a*) agglutination, (*b*) opsonic index, and (*c*) bactericidal action of the serum. He pointed out that as yet no clue of this kind had been discovered by means of which the effects in the body of bacillus coli infections might be followed. He then dealt with the loss of bactericidal power in the glandular secretions in cases of bacillus coli infection, (*a*) in the bile, where the bacillus flourishes, (*b*) in the pancreatic juice where the bacilli are as a rule absent even in cases where the liver is invaded, and (*c*) in the intestine, where the normal regulation of bacterial growth is disturbed. He also dealt with the occasional failure of alkaline treatment in pyelitis and suggested that this was probably due to the establishment of necrotic foci in the tissues where the bacilli could grow in spite of the inhibitory influence of the alkali.—Dr. C. Christopher Heywood read a paper on Calmette's Tuberculin Reaction and considered the claims of Calmette that the reaction is easy of application, harmless, and trustworthy. He thought that the test was practically harmless if the strength of the tuberculin used was never greater than 0·1 per cent. Excessive reaction was almost always due to the use of too strong a solution or to repeating the test on the same eye at too short an interval. It was not infrequent, even with a weak solution, to get a phlyctenular conjunctivitis. In considering the trustworthiness of the test he analysed the results of 127 cases. Of these 37 were definitely tuberculous and all except four gave the reaction. The four negative cases died in a short time. There were 20 "doubtful" cases and of these 13 gave a positive and seven a negative reaction; practically all the seven negative cases proved to be not tuberculous. Of the remaining cases (70) thought not to be tuberculous, ten gave a positive and 60 a negative reaction. The ten positive cases included seven cases of chorea and Dr. Heywood's experience was that 50 per cent. of cases of chorea gave a positive reaction. He summed up by saying that he considered the negative reaction to be more trustworthy than the positive.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 18th, Dr. P. Boobbyer, the President, being in the chair.—A motion, proposed by Dr. A. C. Reid and seconded by Dr. W. Hunter, earnestly requesting the corporation of Nottingham to make provision for the erection and maintenance of a municipal crematorium in the future, was agreed to by a large majority.—Mr. W. Morley Willis, in a paper entitled "The Surgeon's Night-bell," alluded to some of the emergencies which might need immediate operation at any hour. In the case of perforated gastric ulcers no one factor had such a favourable influence on operation as early diagnosis and immediate resort to it. Of cases operated on within 12 hours of the accident occurring 80 per cent. recovered, whereas if operation were postponed to 36 hours or longer the prospect of cure became very remote. In certain cases, however, the area of peritoneum contaminated was limited by adhesions, and such cases, both clinically and in the matter of prognosis, were subacute rather than acute. For anatomical reasons Mr. Willis urged the erect rather than a recumbent posture for the patient before operation, for it was better that contaminating material escaped from the stomach should gravitate towards the pelvis rather than remain in the neighbourhood of the diaphragm, and it was found as a matter of experience that perforation usually occurred near the lesser curvature. After illustrating his paper by an account of several cases which had been under his own care, Mr. Willis passed on to the consideration of cases of ruptured ectopic gestation, in which, as a rule, speedy operation gave the patient her best chance of recovery. A specimen of a ruptured tubal sac of the size of a large walnut removed from a patient with a successful result was shown. In this case transfusion of saline solution had to be resorted to as the patient was extremely collapsed at the time of operation, from four to five pints of clotted blood and fluid being found free in the abdomen.—The paper was discussed by the President, Dr. J. Watson, Dr. J. A. Waring, Dr. Hunter, Dr. F. H. Jacob, Dr. J. S. Bolton, Dr. R. Heelis, Dr. A. J. Sharp, and Dr. J. H. Thompson, and Mr. Willis replied.

CLINICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on Nov. 17th, Dr. C. C. Heywood being in the chair.—Mr. E. Stanmore Bishop read a short paper on Some Points in Gastric Surgery, illustrated by lantern slides. After depicting on the screen radiographs of a normal and of a dilated stomach, Mr. Bishop discussed the effect of posture upon the outline of that organ. He then proceeded to set forth the views of different authorities upon the effects of gastro-enterostomy: (1) it might be regarded as a means of drainage and giving rest to the stomach; (2) it acted as a safety valve in cases of obstruction; and (3) it might act in both ways at different times. In support of the last view the speaker drew an analogy between the stomach after the operation of gastro-enterostomy and the male urethra when a perineal opening had been surgically established in cases of strictures. Mr. Bishop then showed on the screen the results of observations upon stomachs made by himself and Dr. Barclay by means of the x rays, after the performance of gastro-enterostomy for gastric ulcer, &c., noting especially the route by which farinaceous food left the stomach. Finally, Mr. Bishop exhibited and discussed several forms of stomach clamps, with special reference to the advantages to be derived from the use of a pattern introduced by himself.—Dr. E. Vipont Brown gave a brief description of two cases of Malignant Disease treated with Trypsin, and set forth that although no cure could be claimed the condition of the patients had been so ameliorated that this method of treatment should receive a more extensive trial.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 19th, Dr. George Williamson, the retiring President, being in the chair.—The annual report of the council was submitted and adopted and the following office-bearers were elected for the session 1908–09:—President: Dr. David Rennet. Vice-President: Dr. John Marnoch. Secretary: Dr. G. M. Duncan. Assistant Secretary: Dr. Henry Peterkin. Recording Secretary: Dr. Thomas Fraser. Treasurer: Dr. A. H. Lister. Librarian: Dr. P. Howie. Members of council: Dr. J. F. Christie, Dr. G. M. Edmond, Dr. H. M. W. Gray, Dr. J. Gordon, Dr. A. W. Mackintosh, Dr. H. Peterkin, Dr. G. Rose, and Dr. George Williamson.

Reviews and Notices of Books.

Squire's Companion to the British Pharmacopœia. By PETER WYATT SQUIRE. Eighteenth edition. London: J. & A. Churchill. 1908. Pp. 1459. Price 14*s.* net.

To give its full and perfectly justifiable title this work is a companion to the latest edition of the British Pharmacopœia, comparing the strength of the various preparations in that official work with those of the United States and other pharmacopœias, to which are added preparations which are not official, together with practical hints on prescribing. This, the eighteenth edition, has been demanded in view of the extraordinary advances which have been made in chemistry, pharmacology, and pharmacy during the last decade. Splendidly as the "Companion" has served in the past so is it calculated to serve equally in the future, for no pains have been spared to

bring the present edition into complete line with the elegances and refinements of modern pharmaceutical attainments. Needless to say, the record of this pharmaceutical progress faithfully described in the pages has necessitated the practical rewriting of the work. The following figures serve to show the growth of the "Companion" since it was first introduced. In 1864 the "Companion" contained 220 pages; in 1874, 458 pages; in 1886, 562 pages; in 1890, 660 pages; in 1894, 733 pages; in 1899, 882 pages; and the present edition no less than 1459 pages. While, therefore, there was a steady addition of about 100 pages in the succeeding editions up to 1899 the number of pages added to that edition and now contained in the present edition is nearly 600. It may be said, therefore, that very nearly half of the text in the new edition has been allocated to new pharmacy, to the advances, that is to say, which have been made in the testing and chemical and physiological standardisation of drugs and chemicals used in medicine, in the elaboration of synthetic remedies, in the presentation of old medicaments in new and more effectual form, and so forth. Further, the new editions of the foreign pharmacopœias, including even the Japanese Pharmacopœia, have received consideration. The publication of the "Companion" was in fact delayed owing to the author's desire to include the more important tests of the French Codex which has only recently been published. In spite of the attention which has thus been given to points on which the modern practitioner and pharmacist will welcome an authority, the "Companion" preserves its old "get-up" and the general arrangement remains the same as before. The special feature which, for example, has rendered the book so convenient as a work of reference in the past is the prominent distinction in type which is drawn between the "official" and "not official" preparations. This plan, to mention one decided advantage, places before the prescriber a complete list of "official" and "not official" preparations given under each substance immediately following the dose, so that he can readily and without further reference ascertain the various forms in which any medicament may be given.

As to the instances which may be quoted of the important additions made since the seventeenth edition was issued a few will suffice to prove the care which has been taken to make the present edition a faithful record of modern advances. We may refer to the monographs on aconite, belladonna, cinchona, cocaine and its "not official" preparations alypin, novocaine, stovaine, and tropacocaine, and on ergot, the recent researches on ergotoxine which is now regarded to be the most important active principle being described. Further are to be found monographs on similar developments in regard to the pharmacology of nux vomica, ipecacuanha, opium, jaborandi, and pilocarpine salts, an article on quinine sulphate in which the new French pharmaceutical tests are introduced, a useful reference to the new organic arsenic compounds, including atoxyl, and also to mercury compounds. A good deal of fresh work has been involved in the re-writing of the section on prescribing notes, examples of which appear under ergot, iodoform, and tinctures. Finally, it is not surprising to find that due attention has been given to the subject of solubilities, since the importance of it was first recognised by the late Peter Squire, figures for the solubility of chemical substances having been introduced by him in the earliest editions of the "Companion," which were subsequently included in the British Pharmacopœia. The sections on "tests" present advantages to the practitioner, for in them the requirements of the Pharmacopœia are interpreted into figures of absolute percentages, so that he need not be concerned what a definite weight of a substance should require in the way of a definite volume of a certain standard solution, or what definite weight of precipitate a definite weight of a certain substance should yield when treated with certain reagents.

The chapter on "Medicinal Properties" has been revised by Dr. Taylor Grant; that on "Descriptive Notes" has been written by Mr. E. M. Holmes who has also assisted in the revision of the organic materia medica; and finally the chapter on Therapeutic Agents of Microbial Origin (therapeutic sera, tuberculin, opsonins, and vaccines) is by Professor R. Tanner Hewlett.

The "Companion" is a classic, but it is a standard also, and the author, together with his laboratory staff and collaborators, may be congratulated heartily on having completed a work which, because of its thorough and authoritative character, is sure to receive the appreciation of physician, chemist, and pharmacist alike.

Surra in the Federated Malay States. By HENRY FRASER, M.D. Aberd., Director of the Institute for Medical Research; and S. L. SYMONDS, V.S. Melb., Government Veterinary Surgeon. With a note on the Distribution of Certain Species of Biting Flies in the Federated Malay States by H. C. PRATT, Government Entomologist. Numerous illustrations and diagrams. Singapore: Kelly and Walsh, Limited. 1908. Pp. 38. Price 3*s.* 6*d.* net.

THIS short treatise on surra is the ninth of a series of studies issued by the Institute for Medical Research, Federated Malay States. The work at present before us is the result of the coöperative researches of the medical, veterinary, and entomological experts, the result of such combined work being eminently satisfactory. The treatise embodies a short description of the exhaustive and far-reaching experiments which have been carried out in the Malay States for the purpose of making clear the causation, means of spread, and possibilities of prevention and treatment of this fatal animal scourge. The observations—made, as they are, independently of the researches which have been, and are being, carried out in India (where the disease was discovered by Evans, after whom the causal trypanosome is named)—are valuable as confirming and extending our knowledge of the disease.

The experiments recorded have been carried out intelligently and clearly demonstrate that the causal organism is the trypanosoma Evansi and that it is indistinguishable in morphology and pathology in horses, cattle, and dogs, the only differences being in regard to virulence. It is equally clear that the biting flies which are responsible for its transmission from animal to animal belong to the genus Tabanus, the existence of which flies is dependent on the presence of jungle; hence there is a much lower percentage of cases in the towns. A most important problem still, however, remains unsolved, and that is as to whether the trypanosome passes one part of its life-cycle in the fly, and experiments conducted to elucidate this proved inconclusive. It was, however, shown that trypanosomes are not to be found in the intestinal tract of the infected fly after 24 hours.

Observations have been made on naturally infected horses, oxen, and dogs, and on cases which have been infected experimentally, the subjects for these latter being chosen to demonstrate the course of the disease in animals of various ages and condition. Animals in good condition and others in poor condition have been infected and the result in all cases has been the same provided the quantity of material used was similar. The most certain method of transmission was subcutaneous inoculation with infected fresh blood, but it has also been shown that a mere scratch with an infected needle is sufficient to set up the disease. It has been found a difficult and often disappointing task to effect the transmission of the trypanosome by the natural means—namely, the Tabanus. The course of the disease and the

sequence of symptoms are traced in a number of cases, and the relation between the temperature and the number of trypanosomes in the patient's blood is demonstrated by means of several excellent charts, by which it is made clear that as a rule these vary in direct proportion to each other; and the greater the number of the parasites the higher the temperature. To this rule, however, there are striking exceptions towards the fatal termination of an attack, when the temperature is sometimes subnormal, even although the blood swarms with trypanosomes.

As regards prophylactic and curative measures the authors have no new suggestions to make. The disease is endemic in the Malay States and the authors suggest the slaughter of all animals found to be affected and also of all animals emaciated without any apparent reason. They recommend that herding of cattle in large numbers, especially near jungle, should be avoided and they advise the detention of all imported animals at the port of arrival until such time as they have been examined. Treatment by atoxyl has been tried in several cases but the good results obtained in some were only temporary, death being the usual ending. No better results were obtained with mercuric chloride and tartarated antimony. Some excellent plates, prepared from photographs, illustrate the morphology of the trypanosoma Evansi.

The Government entomologist, Mr. H. C. Pratt, has contributed an article on the Distribution of Certain Species of Biting Flies in the Federated Malay States, and this, together with a map of the country, completes this interesting little scientific brochure which is worth the attention of all students of tropical medicine, since the conclusions arrived at here may serve to throw further light on human trypanosomiasis. Tropical medicine is indebted to the conjoint authors for their endeavours to elucidate further the phenomena of this serious disease. The printers have done their work well; the printing and binding leave nothing to be desired.

A System of Syphilis. In Six Volumes. Edited by D'ARCY POWER, M.B. Oxon., F.R.C.S. Eng., and J. KEOGH MURPHY, M.D., M.C. Cantab., F.R.C.S. Eng. With an Introduction by Sir JONATHAN HUTCHINSON, F.R.S. Vol. I. With 68 plates. London: Hodder and Stoughton and Henry Frowde. 1908. Pp. xxxv.–380. Price £2 2*s.* net per volume.

THE appearance of a work on syphilis containing among the names of the contributors those of Professor Elie Metchnikoff and Sir Jonathan Hutchinson cannot fail to excite the interest and to arouse the expectation of the reader. We may say at once that in the first volume of this work such expectations will be more than fulfilled. The book is one of great merit and the editors are to be congratulated cordially on this exceedingly good beginning to their enterprise. If the remaining volumes maintain the high level of excellence of the first, the whole will form a treatise on syphilis of the utmost value and importance. The sections of most interest in the present volume are the introduction by Sir Jonathan Hutchinson and the account, as absorbing as a romance, of the microbiology of syphilis written by Professor Metchnikoff and translated with much success by one of the editors, Mr. Keogh Murphy. In his introduction Sir Jonathan Hutchinson surveys the whole field of syphilis in the light of the most recent work and especially of the discovery of the spirochæta pallida. At the same time he utters a wise and weighty warning to the many workers in the new field of experimental study which has been opened up by the discovery of the specific organism of syphilis and the fact of its communicability by inoculation to some of the higher apes, that their inferences should not be hastily accepted without clear proof and that they should remember the disastrous results of the conclusion of John Hunter, based on erroneous experiments, that gonorrhœa and syphilis were caused by the same poison.

It is only necessary to read the series of questions propounded by the writer of this essay to realise how many and important are the problems connected with this disease on which our knowledge is at the present time of the very scantiest description. Possibly in the course of time the stimulus which the recent discoveries in this field of medicine have given to further investigations may lead to the elucidation of some at any rate of these perplexing questions.

The first chapter in this volume is one on the history of syphilis by the well-known authority on this subject, Dr. Iwan Bloch. He demonstrates beyond the possibility of doubt that the last decade of the fifteenth century—particularly the years 1493-1500—was the time when syphilis first appeared in the Old World. Further than this, he shows certainly that syphilis was unknown in Europe before the year 1493 and that its home was the island of Española or Haïti, whence the crew of Columbus brought it after the latter's first voyage. The various arguments as to the pre-Columbian origin of syphilis are considered fully and refuted, and this is followed by a short account of the early and later history of syphilis in Europe.

Professor Metchnikoff's article contains, as we have said, a most absorbing account of the work done in the search for the specific organism of syphilis ending in the brilliant discovery by the late Fritz Schaudinn—foreshadowed, as he shows, by the work of the French microscopist, Donné, as early as the year 1837—of the spirochæta pallida and the proof of its etiological relation to all the lesions of this protean disease. Professor Metchnikoff's generous recognition of the brilliant work done by Schaudinn is reflected in the happy inspiration of the editors who have dedicated their work to his memory and to the trio of distinguished syphilographers, still with us, Fournier, Hoffmann, and Hutchinson.

The section on the general pathology of syphilis is contributed by Dr. F. W. Andrewes and we can pay it no higher compliment than to say that it is quite as good as the chapters which precede it. From his very large experience Colonel F. J. Lambkin, R.A.M.C., writes with authority on the subject of the primary lesion and early secondary symptoms as seen in the male. In the very excellent tables which he gives to render the diagnosis of a chancre easier we must confess that we think the use of the term chancroid liable to mislead, especially as the next table is headed non-syphilitic ulceration, which, we infer, may be of the same character—namely, chancroid. Does Colonel Lambkin mean by this term a mixed chancre or the ulcus molle, the soft chancre, or what Sir Jonathan Hutchinson suggests had much better be called the non-indurated ulcer? The confusion is likely to be even worse if the term chancroid is to be used in reference to the very atypical primary lesions so often met with in women.

The early manifestations in the female sex are described by Dr. Arthur Shillitoe who calls special attention to the fact that often no obvious primary lesion is to be found even after the most careful examination and to the interesting question of a pigmentary syphilide of the neck as an early secondary symptom. The final chapter on congenital syphilis is from the pen of Dr. G. F. Still and contains a most complete account of this important phase of the disease.

The plates, 68 in number, are very good and we may call special attention to the direct colour photographs now used for the first time to illustrate clinical conditions and for which the editors acknowledge their indebtedness to Mr. Tubbs and Dr. Arnold Moritz. The printing and type are

clear and the whole work gives promise of being so important an addition to the literature of syphilis that we look forward with interest to the appearance of the remaining volumes.

Attention. By W. B. PILLSBURY. London: Swan Sonnenschein and Co. 1908. Pp. 346. Price 10*s.* 6*d.*

THIS work forms an elaborate endeavour to bring together in an orderly way the results of different researches, and the theories resulting therefrom, on the subject of the attention. Mr. Pillsbury defines attention, from the standpoint of its conscious characteristics, as an increased clearness and prominence of some one idea, sensation, or object, whether remembered or directly given from the external world, so that for the time it is made to constitute the most important feature of consciousness. This central position of the process in question depends upon two general factors, the present environment on the one side and the entire past history of the individual on the other. Nor is man's experience only composed of the comparatively few events which have brought him into direct contact with nature, but through tradition and books he has summed up within himself the entire experience of the human race. Through heredity also it may be possible to trace some small number of the conditions which have to be taken into consideration in explaining any act of attention back to the acts and surroundings of his predecessors in the course of evolution. The physiological processes which are peculiar to attention are reinforcement or facilitation and inhibition. Reinforcement is defined as increase in the activity of one nerve cell by the action of another cell or cells not in the direct line of transmission, while inhibition is a mutual opposition of two cells in their activity. It seems probable that the anatomical seat of attention is in the frontal lobes. These are not indeed the seat of spontaneous energy but are the association centres that mediate between sensory, and sensory and motor, areas of the cortex. The degenerations of mind are nearly all accompanied by weakened or deranged attention, and in insanity two forms of change may be noted, the general instability that forbids any concentration, as in mania, and the distorted attention that gives rise to fixed ideas, as in paranoia.

Attention is of importance in memory. What is remembered at any moment is dependent upon the objective and subjective setting of that moment. The ease with which an event is recalled is largely due to the interest with which the impression was received in the first place and to the way in which it fitted in with the other elements in consciousness at that period. An impression received in one way at its first entrance may take on an entirely different aspect when it reappears. New interpretations may be given to it, new meanings put upon it, because of the new knowledge which has been received between the times of the first and second entrance. In every way then is memory influenced by attention, and its conditions as a whole are very similar to the conditions of attention.

The author concludes his work with an interesting chapter upon the applications of the theory of the attention to education. The first problem which meets the teacher is how to hold the attention of the pupil, and if this can be satisfactorily accomplished everything else will be comparatively simple. The question is, What is likely to hold the attention of a particular child? The only answer, according to the author, that can be given is in terms of the earlier history of the child. Anything will be interesting that the child knows something about and which is neither too old nor too new, which can in some way be attached to the pupil's earlier experiences and at the same time is new enough not to seem commonplace. Furthermore, the new material must be presented in such a way that the connexions with the older elements shall come out prominently. The first condition for the teacher is to know the child, and this knowledge must be not only statistical but also sympathetic. It must include some knowledge of the home life of the child and, ideally, of his parents also. But to decide what shall be taught to a child in terms of his interests alone is but one side of the question. The aim of education is to mould the child for useful participation in the life of the community, and the test which every scheme proposed must meet is whether it puts the child in possession of those portions of traditional knowledge which shall most thoroughly prepare him for life in the community, and to arrive at this end the attention of the child must be held to all those elements of knowledge which are essential to his individual progress and any influence which can be regarded as the natural determinants of attention must be used.

Mr. Pillsbury's work is an exhaustive one and should be of very considerable interest to those concerned in psychological and educational problems. His subject-matter necessarily consists in the treatment of highly abstract ideas, but he has made judicious use of such elementary positive knowledge of the operations of mind as we possess and has represented his data and theories in a style of much literary merit.

LIBRARY TABLE.

Encyclopædia of Local Government Board Requirements and Practice. Being an Encyclopædia of the Requirements and Practice of the Local Government Board in connexion with Applications to Them, including a Summary of the Statutory Provisions Governing each Matter dealt with. By A. E. WOOD and T. R. JOHNSON. In two volumes. Vol. I., pp. 452 + 55; Vol. II., pp. 435 + 55; total, pp. 887 + indexes. London: Butterworth and Co. and Shaw and Sons. 1908.—It is only those who are brought officially into contact with the Local Government Board who have any proper conception of the enormous scope of the Board's duties or of the intricate nature of the multitudinous matters with which it deals. Even those, like medical officers of health, clerks to local authorities, members of district councils and of boards of guardians who are in touch with certain aspects of local government find themselves bewildered by the numerous orders, circulars, and explanatory notices which are issued annually by the Board in connexion with new and old statutes and in modification of existing practices and interpretations. It is with a view to reduce chaos to some semblance of order and to facilitate the work of local officials that the two volumes now under review have been written, and although the work cannot, of course, be regarded in any sense as an official publication, it has the merit, for in the circumstances it is a distinct advantage, that the authors are themselves on the clerical staff of the Local Government Board and thus the book is given a certain *cachet* which it might not otherwise possess. The two volumes are together divided into 59 parts, each part dealing with a particular subject, such, by way of example, as arbitrations under the Public Health Act, 1875, boarding out of pauper children, borrowing, burial grounds, commons and open spaces, emigration, housing of the working classes, provisional orders, sea defences, telephonic systems, workhouses, water-supply, and, in fact, all matters concerned with local government. Each part deals with every aspect of the subject and indicates the procedure which should be adopted to conform with the statutes and with the practice of the Local Government Board; it comprises also the Parliamentary papers relating to each subject. The whole is well got up and capitally arranged and the volumes possess in addition the great advantage of lightness in weight. The authors have, we think, succeeded

in compiling a work which has been much needed for very many years past; it cannot properly be termed a public officer's *vade mecum* because of its size but it may certainly be regarded as a work of reference of the greatest utility.

Verhandlungen des Vereins Süddeutschen Laryngologischen, 1908. (*Proceedings of the Society of South German Laryngologists.*) Würzburg: A. Stuber. Price 2 marks.—There are ten papers reported in this issue of the Proceedings of the South German Laryngological Society. One by Brüning on the Lighting Principles of Endoscopic Tubes is of very great interest, as it is beautifully illustrated and will be found of undoubted benefit to those laryngologists who are using these instruments which now appear to have arrived nearly at perfection. This is followed by a paper by Körner on the Clinical Causes of Ocular Paralyses and Paralysis of the Recurrent Nerve; Goris contributes a short note on the Radical Removal of Commencing Nasal Sarcomata; Guyot has a paper of rather greater length on Tuberculous Tumours of the Nose and Naso-pharynx; and Manasse a short paper on the Pathology and Therapy of Malignant Diseases of the Antrum of Highmore; whilst Meyer showed preparations from a case of Leukæmic Affection of the Pharynx. A case was shown by Kante of a Tumour of the Pontine Angle of the Cerebellum, with discharge of cerebro-spinal fluid from the nose, which is of interest when we remember the interesting case similar in some respects to this one, which was reported by Dr. StClair Thomson. Nager contributes a paper on Tumours of the Naso-pharynx; Schaefer describes a stool for Laryngoscopy and other examinations; and Jurasz demonstrates an Unusual Anomaly of the Naso-pharynx. The articles are all very short but they are extremely well written and edited.

Die Lehre von der Intubation. (*The Study of Intubation.*) Von Professor Dr. J. VON BOKAY, Direktor des "Stefanie" Kinderspitals zu Budapest; Ehrenmitglied der Moskauer kinderärtzlicher Gesellschaft; korrespondierendes Mitglied der Société de Pédiatrie in Paris und der Aertzlicher Akademie in Rom. With 113 Illustrations in the Text and 2 Plates. Leipsic: F. C. W. Vogel. 1908. Pp. 250. Price 10 Marks.—At first sight it would appear difficult, without undue padding, to produce a book of this large size on the subject of intubation, but when we come to examine critically the result of Professor Bokay's labour a very different impression is derived, for not only is the whole history from O'Dwyer's original communication, just ten years ago, given in detail, but also practically all the literature on the subject which has appeared in the medical press in any language has been brought under contribution. The instruments, from their earliest form to the present, are accurately described and faithfully reproduced. The value of intubation in other diseases besides diphtheria, such as chronic subglottic hypertrophy, scleroma laryngis, laryngeal papillomata and stenosis, is carefully considered. The *pros* and *cons* for intubation *versus* tracheotomy are likewise weighed with judicial impartiality; finally there is what it would be imagined is a most complete bibliography of the literature, comprising some 30 pages. As a work of reference on intubation the book cannot well be surpassed and must inevitably prove extremely valuable to all future writers on, and students of, the subject.

JOURNALS AND MAGAZINES.

Ophthalmology. Edited by H. V. WÜRDEMANN, M.D., of Milwaukee; Assistant Editor, G. I. HOGUE, M.D. Vol. V., No. 1. October, 1908. Issued quarterly. Editorial and Publishing Offices, 105, Grand-avenue, Milwaukee, Wisconsin, U.S.A. Price per number, 6*s.*; per annum £1 1*s.*—In addition to numerous abstracts from the current literature on ophthalmology and reviews of recently published works on that subject this number contains the following original articles: 1. Artificial Illumination of Schoolrooms, by Myles Standish, M.D., of Boston. In this article the arrangements adopted in the Boston schools with tungsten lamps with Zalinsky shades are described. 2. The Treatment of Chronic Simple Glaucoma, by C. A. Veasy, A.M., M.D., of Philadelphia, with numerous diagrams in the text. The author shows that the meiotic treatment often fails and gives suggestions for the adoption of operative measures. 3. Glaucoma following Secondary Cataract (Capsular) Operation, with a report of three cases, by Frederick E. Cheney, M.D., of Boston. 4. Microphthalmia, by H. H. B. Cunningham, M.D. Brux., F.R.C.S. Irel., M.R.C.S. Eng., of Belfast. 5. Case of Papilloma of the Cornea, by Eugene Smith, M.D., of Detroit, Michigan, with a drawing. 6. Extirpation of the Lacrymal Sac, When and How? by Jesse S. Wyler, A.B., M.D., of Cincinnati, Ohio. The operation is especially applicable to cases of ulcus serpens. 7. The Ocular Symptoms of Ethmoidal Disease, by Frederick Krauss, M.D., of Philadelphia. 8. A Solution of Dr. George T. Stevens's New Phenomenon of Colour Conversion, by E. E. Blaauw, M.D., of Buffalo, New York.

Annals of Ophthalmology. Edited by WILLIAM T. SHOEMAKER, M.D., of Philadelphia, and C. W. PARKER, M.D., of St. Louis. Vol. XVI., Nos. 3 and 4. St. Louis, Missouri, U.S.A.: Jones H. Parker. Price, with "Annals of Otology," $7.00.—These numbers contain a biographical sketch of W. Thompson, M.D., of Philadelphia, an eminent American ophthalmic surgeon; The Amplitude of Accommodation at Different Periods of Life and its Relation to Eye Strain, by Edward Jackson, M.D., of Denver, Colorado; Anisometropia, by W. Bruner, M.D., of Cleveland, Ohio; Double Perforation of the Eyeball by Metallic Bodies, by Edward Adams Shumway, M.D., of Philadelphia; History of a Case of Subretinal Cysticercus by Fernando Lopez, M.D., of City of Mexico; Observations on the Motais Operation for Ptosis, by W. T. Shoemaker, M.D., of Philadelphia; and there are also numerous abstracts from the ophthalmic literature of England and the continent.

The Edinburgh Medical Journal.—The most interesting paper in the November number of this journal is perhaps a post-graduate lecture by Sir Alexander Russell Simpson on Uterine Fibroids, in which a historical sketch is given of the gradual progress of gynæcology in operative measures for uterine conditions. The introductory address of Mr. F. M. Caird on the Evolution of Surgery in Edinburgh is also historical in type. Dr. D. P. D. Wilkie writes on vaccine treatment for mixed infection in tuberculous disease, from which he has obtained good results in the direction both of prophylaxis before operation and of cure of post-operative fistulas. Sir George Thomas Beatson records a case of rapidly growing Fibro-adenoma of the Mamma; and Mr. Alexander Don one of Congenital Diaphragmatic Hernia in an old man.

The Dublin Journal of Medical Science.—A portrait of the late Sir Arthur Vernon Macan forms the frontispiece of the November issue of this magazine and a paper from his pen on the Operative Treatment of Puerperal Fever constitutes the main original article. He notes the brilliant results that have been obtained in cases of threatened or early peritonitis from the procedure of separating the uterus as far as possible from its surroundings, administering large doses of iodine, and stimulating the action of the kidneys. Ligature or removal of infected veins and hysterectomy are also discussed. Dr. Robert J. Rowlette contributes a pathological report of the Rotunda Hospital for the year ending on Oct. 31st, 1907.

The Medical Chronicle.—The November number contains only one original communication, an article on Post-Anæsthetic Acidosis, or Delayed Chloroform Poisoning, by Mr. Hugh T. Ashby. The author notes that the condition is almost confined to children and may follow the administration of chloroform for quite small operations. He favours the view that the acidosis which occurs is due to the presence of β-oxybutyric and diacetic acids formed from fat existing in the liver, a fatty condition of which organ may be caused by rickets. By way of treatment sodium bicarbonate should be pushed till the urine becomes alkaline.

The Birmingham Medical Review.—In the October issue Dr. T. Stacey Wilson advocates the employment of reverberation—a modified form of auscultatory percussion—for the diagnosis of gastric dilatation and the use of massage for the treatment of atonic states of the stomach. Mr. A. W. Nuthall writes on Acute Pneumococcal Peritonitis, which he regards as due to a general blood-infection, and gives notes of three cases; and Dr. Otto J. Kauffmann records two cases in which a condition was found suggestive of a relationship to status lymphaticus. The characteristic phenomenon of sudden death did not, however, ensue.

New Inventions.

AN "AUTO-GLOVING MACHINE."

WE have recently examined an "Auto-Gloving Machine" manufactured by C. A. Hoefftcke, Limited, 21, Woodstock-street, London, W., after a design suggested by a London surgeon. It is an ingenious contrivance of somewhat formidable appearance, but is made so as to form a quite suitable piece of furniture for an operation-room. Its object is to provide means whereby indiarubber gloves can be put on without being touched on the outer surface by the hands. The apparatus consists essentially of a cylinder which can be partially exhausted by a piston worked by a pedal. At the top of the cylinder is a flanged rim, over which the wrist of the glove is stretched and fixed with the fingers hanging vertically into the cylinder; the glove thus when in this position completely closes the upper aperture, forming, as it were, a dependent diaphragm. When the operator treads on the pedal the air-tight piston is pulled downwards, producing a partial vacuum in the metal tube and the difference in the atmospheric pressure thus produced stretches the gloves to the size of a boxing glove with wide fingers and thus enables the hands to be inserted easily into them. At the same time an automatic catch under the pedal fixes the piston. When the hands are in the gloves, by treading on the pedal air is admitted into the metal tube and the gloves contract upon the hands with a sudden snap. This action also releases the catch and the spring attached to the pedal forces the piston upwards and the air releases the gloves from the upper end of the apparatus. The hands with the gloves applied can then be withdrawn. The appliance, which is made of plated metal, is simple in construction. It can be taken to pieces quite easily and every part sterilised. The gloves are stretched evenly over the whole surface by the minus air pressure, and in consequence there is no danger of the gloves being torn. A pair of gloves can be put on in a few seconds by anyone accustomed to the machine, and the gloves can be either wet or dry. The appliance is made single or double. When using the single-glove machine one glove is put on at a time, and with the double-glove machine both gloves are put on at once.

A COMBINATION BED-REST FOR INVALIDS.

Mr. James Taylor has brought to our notice a new combination bed-rest which he has invented and which has been made for him by Messrs. Braun and Co., 1, Northdown-street, King's Cross. It consists of a light wooden frame, which can be clamped to the back of bedsteads of varying designs. This frame incloses a back-rest made of spring mattress wire which can be inclined at any angle comfortable to the patient. When out of use it rests upright above the back of the bed and it can be swung down into position behind the patient's back without disturbing the pillows. A slight push of the hand suffices to return it to its "off-duty" position, a manœuvre which can be effected by a convalescent patient. A special feature of the device is that the bed-rest is accommodated to the patient and not the patient to the bed-rest. The stability of the back-rest is obtained by a weight consisting of a small water-tank, which is attached to the back of the rest by two cords passing over pulleys fixed to the back of the bed, below which the weight hangs. This device renders the inclination of the back-rest to any desired angle an easy matter. An accessory feature is a tray which folds up over the frame of the back-rest and, as shown in the figure, can be brought down over the patient's head into a convenient position for the service of meals; by the release of a spring it can be tilted to a slight degree to form a sloping desk for reading and writing. The inventor claims for the bed-rest lightness, comfort, and compactness, and after examining it we have formed the opinion that this claim is justified and that it will make a useful accessory for the sick-room.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 28, 1908.

Fifty Years of the General Medical Council: Progress and Retrospect.

ON Tuesday, Nov. 24th, there opened the eighty-eighth session of the "General Council of Medical Education and Registration of the United Kingdom," and the session is a jubilee one. For rather more than 50 years ago—to be precise, upon August 2nd, 1858—the body with the above somewhat cumbrous title came into existence "by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled and by the authority of the same." The object of the Act with the above preamble was not, as many persons both within and without the medical profession imagine, so much to benefit that profession but to enable persons requiring medical aid to distinguish qualified from unqualified practitioners. We have made this statement very many times, but hardly a week goes by without the receipt of some communication, in response to which we have to point out that the General Medical Council has neither the powers nor the mission to act in the way desired. The ability to make a differential diagnosis between qualified and unqualified men is, as the Act states, "expedient," but in many cases laymen do not seem yet to concern themselves much as to whether a practitioner is qualified or unqualified. The resulting abuses are, however, under serious consideration, and the thinking members of the public are on the side of reform. The progress of medicine has determined them to be so. The 50 years which have elapsed since the passing of the Medical Act of 1858 have seen far-reaching and most important changes in the science and art of medicine and in the teaching of the same. Bacteriology, pathology, etiology, the physiological or biological processes with which are concerned the subjects of opsonins and of vaccine therapeutics have opened up new regions for research and have trebled the armament of medical men in the fight against disease. The medical student of to-day is no longer the type of man described by DICKENS, THACKERAY, and ALBERT SMITH, but a serious-faced youth oppressed with the burden of a five years' curriculum and such an infinity of subjects to be learned that the five years prove quite inadequate. Sir DONALD MACALISTER in his presidential address to the Council, which we publish this week, made no attempt to deal with the vast changes which have taken place since the Council was instituted. Nor shall we. No one could have told the story better than the President of the General Medical Council, but his restraint, his determination to be silent rather than to use up valuable time, must meet with universal approval.

Now although the general standard of knowledge and of work is to-day far higher than that of 50 years ago, we of to-day should remember the debt that we owe to those who have laboured in the same field before us. There is no greater incentive to the medical man of to-day to walk humbly and earnestly and to do his best to add something to the knowledge of his profession than to consider the bygone worthies of medicine. Every medical man should have a hobby and one of the most pleasant and profitable hobbies is the study of the history of medicine. This study may either be pursued at first hand, which takes considerable time, or it may be carried on simply by absorbing the labours of others. To those who care to take their historical studies easily we can commend a book which has recently appeared—one, moreover, written by one of the most cultured and able physicians of to-day, who worthily holds the post of Regius Professor of Medicine in the University of Oxford. In "An Alabama Student and other Biographical Essays"[1] Professor W. OSLER recalls to our minds such men as THOMAS DOVER, LOCKE the philosopher who was also a physician, BEAUMONT, HARVEY, Sir THOMAS BROWNE, and the Alabama student whose name was JOHN Y. BASSETT. The Alabama student was a man whose example is one for all time so far as concerns his burning desire for knowledge. Of such stuff are made the FARADAYS, the VELPEAUS, and all who have struggled with success to learn. BASSETT practised in Alabama in 1835, a date at which that state was, if not exactly a wilderness, at least but sparsely populated. He had studied at the Washington Medical College and had evidently learned that great lesson, how to learn. So consumed by a desire for knowledge he left his wife and children, not without a hard struggle, and set out for Europe, and above all for Paris, that lodestone of all medical men in the former half of the last century. Arrived in Paris he attached himself to VELPEAU for teaching in surgery and anatomy and with true singleness of heart he again began dissecting. The student of to-day will feel a not unnatural envy when he reads BASSETT'S statement that a subject cost six francs and the body of a child only 40 sous. In a letter to his wife he gives an interesting account of the anatomical school at Clamart, a school which still exists and concerning which the present-day French students have recently been agitating. Before very long his industry met with its reward, for VELPEAU appointed him as his *externe*. BASSETT apparently returned to Alabama after a year's study in Europe. Another notable American physician was BARTLETT who, after study in Paris, brought out in 1842 a work on fevers in which the differentiation between typhus and typhoid fever was clearly laid down some years before the work of JENNER and MURCHISON appeared in this country. THOMAS DOVER is a shining example of the "all-round" man of former days, for he started in life as a buccaneer and in 1712 was one of the discoverers of "Robinson Crusoe." In 1721 he was admitted a Licentiate of the Royal College of Physicians of London and in 1732 he published a work on medicine of a popular nature. In this book he describes the celebrated powder which is still one of the most valued remedies that we have. DOVER'S doses,

[1] An Alabama Student and other Biographical Essays. By William Osler, M.D. Oxon., F.R.S. Oxford: At The Clarendon Press. Pp. 334. Price 7s. 6d. net.

however, were enormous—namely, from 40 to 70 grains. Of the other worthies commemorated by Professor OSLER we have no space to speak here but the biographies show that in all ages the earnest student will come to the front, that with all their imperfections and their limitations of knowledge the men of olden days made valuable contributions to medical science, and to one who reads their writings it will be apparent that they cherished high ideals.

BASSETT in one of his papers has left a striking passage upon the study of medicine. He compares it to the study of a foreign language, which he says no one can be said really to know until he can talk with and understand all classes. He proceeds: "Let him then sit down and calculate the cost in time, labour, and talent; then square the amount and go boldly into the study of physiology; and when he has exhausted his programme, he will find himself humbly knocking at the door of the temple and it will be opened; for diligence, like the vinegar of HANNIBAL, will make a way through frozen Alps; it is the open sesame of our profession. When he is satisfied with the beautiful proportions of the interior, its vast and varied dimensions, the intricate and astounding action of its machinery, obeying laws of a singular stability, whose very conflict produces harmony under the government of secondary laws—if there be anything secondary in nature!—when he is satisfied (and such are not satisfied until informed), he will be led to his ultimate object, to take his last lessons from the poor and suffering, the fevered and the phrenzied, from the JOBS and LAZARUSES—into the poorest houses and prisons, and here in these magazines of misery and contagion, these Babels of disease and sin, he must not only take up his abode, but following the example of his Divine Master, he must love to dwell there;—this is Pathology. When such an one re-enters the world he is a physician; his vast labours have not only taught him how little he knows, but that he knows this little well. Conscious of this virtue, he feels no necessity of trumpeting his professional acquirements abroad, but with becoming modesty and true dignity, which constitute genuine professional pride, he leaves this to the good sense of his fellow citizens to discover." In this fiftieth year of the General Medical Council it is well that we members of the medical profession should be reminded of these modest and high-souled words spoken by one of our kin across the seas. The stress of modern life, of competition, and the struggle for daily bread are only too prone to beget a spirit of "pushfulness" and of each man for himself, which spirit may lead to anarchy and a lowering of ideals. If, then, we have more knowledge than our fathers, let us use it no less well than they did—such as they had.

Weather Forecasts.

ALTHOUGH the uncertainty of the weather is a matter of daily experience there are meteorologists who devote their energies to the task of predicting it and in a fair proportion of cases their anticipations are justified by the event. Some of these forecasts are made for short periods of only a few days in advance by the comparison of numerous barometric observations telegraphed to a central station, whilst others extending over long periods of many months are based on inferences drawn from arbitrary cycles which are presumed to present certain features of recurrence. Medical men might well be interested in both forecasts alike, but as a matter of fact it is generally the short prophecy which has the greater significance for them, as possibly influencing their daily work, and it is the short prophecy dealing with very local conditions which is so frequently misleading.

A number of questions bearing on this subject were discussed at the Royal United Service Institution in Whitehall on Nov. 18th, when Colonel H. E. RAWSON, C.B., R.E., read a paper entitled "A New Principle in Weather Forecasting and its Importance in Naval and Military Operations." Commencing with an allusion to the lack of interest in forecasting shown by the higher authorities of the services, he proceeded to explain the seven principal weather types—namely, anticyclone, wedge, cyclone, V-depression, secondary cyclone, col, and straight isobars. All these terms, it may be here remarked, have reference to the curvature and distribution of the isobars or lines of equal barometric pressure as plotted on a weather chart. He then showed lantern pictures of the earth's surface on Mercator's projection exhibiting areas of high pressure and low pressure during the months of January and July. In the former map (i.e., during winter in the northern hemisphere) there was round the globe in the northern hemisphere a belt of high pressure or so-called permanent anticyclones, which might be subdivided into the Siberian, the Atlantic, the North American, and the Pacific systems; whereas in the southern hemisphere the belt was not continuous but there were three systems of permanent anticyclones lying over the Pacific, the Atlantic, and the Indian oceans. In the map for July (i.e., during winter in the southern hemisphere) there was a very different pressure-distribution. The Siberian and North American systems of high pressure in January were now replaced by areas of low pressure, whereas in the southern hemisphere the anticyclonic belt was now continuous and action-centres (centres of maximum pressure) were found over the land in South America, South Africa, and Australia, as well as over the oceans. The action-centre which lay off the coast of Australia in January had now disappeared.

In 1898 it was pointed out by Colonel RAWSON that when the main or permanent systems ceased to be found in their January or July positions they did not dissipate or become "reversed" as was commonly supposed, but they moved away to reappear over another locality at no great distance from the previous one. Such movements were not continuous but could be described as progressive in character, and, generally speaking, they were in one direction in the early months of the year and in the opposite direction in the later months. In setting forth his views as to the seasonal movements of the belts of high pressure Colonel RAWSON took his illustrations chiefly from the anticyclonic belt of the southern hemisphere, the phenomena of which have been recorded in a large number of isobaric charts from the year 1855 onwards. Not only was each system found further south in summer than in winter, which was the natural consequence of the migration of the belt as a whole, but

there was an easterly and westerly movement also. This was particularly striking in the case of the system over the South Indian Ocean, which moved with considerable regularity from the west coast of Australia to the east coast of South Africa and back again. It reached its extreme easterly position in February and its extreme westerly position as a rule in July. Observations have also been made which strongly support the view that the belt shifted its latitude and caused the action-centres to be displaced north and south of a mean position in certain years. If the belt shifted its latitude in accordance with this view the records of places in South Africa, such as Cape Town and Durban, ought to show a variation in the frequency of the winds from an easterly and westerly direction, if these places during some years were on the north side and during other years on the south side of the axis of the belt. Such variations in the direction of the wind have in fact been found to occur in both Cape Town and Durban. An examination of the rainfall records led to a similar result. The general inference was that in South Africa the belt occupied 19 years in passing from its extreme northerly position in 24° south latitude to its extreme southerly position in 34° south latitude and back again to its northerly position. In Australia a 19-year meteorological cycle has been recognised since 1846, and the years of drought were the very years when the belt, according to Colonel RAWSON'S hypothesis of the cyclical oscillation of the anticyclonic belts of the northern and southern hemispheres, would be at the extreme end of its oscillation. In these years the belt would be passing back again for the second time over districts which had already experienced dry anticyclonic weather. All sanitarians should be interested in the success of these prophecies, and British sanitarians in particular have a right to expect that such researches as Colonel RAWSON described are facilitated by the State. On rainfall depend the main issues of life in most of the divisions of the earth, and our flag flies over many districts which can only be made into valuable national assets by attention to meteorological probabilities.

The Objects of Examinations.

FOR want of a better method of coming to a decision as to the capabilities of intending practitioners of medicine examinations are employed but few would be so bold as to venture to assert that the examining system is perfect. Its faults are many, for in addition to those which may be termed intrinsic, as resulting from the very nature of an examination, there are also extrinsic faults which follow from the nature of the examiners and form no essential part of the examination itself. The object of an examination in medicine is to discover if the candidate is competent to carry on the work of a medical practitioner. Now, apart from an examination, an opinion on this point could be most easily formed by someone conversant with the whole life-history and training of the candidate, for it is by suitable and adequate training that the best results can be obtained. The examining bodies and the General Medical Council lay down schemes of study which the candidate must have completed by the time that he presents himself for examination, but every teacher and every examiner in medical subjects know what appalling ignorance may remain even after the student has passed through a prescribed course of study. This fact, for fact it is, is the basis of the need for examinations, and therefore an examination must be searching if the result of it is to be conclusive, yet the time devoted to the examination is so short that it is not easy for an examiner to decide at once on the merits of the average candidate. Some candidates are, of course, so obviously well trained and acquainted with the subjects of examinations that their passing is never for a moment a matter of doubt, and a few are obviously hopeless from the start; but the majority of candidates stand between these extremes and the difficulties of estimating the knowledge of each candidate are indeed great. The personal peculiarities of the examiner are likely to show themselves much more in the *viva voce* portion of the examination than in the written portion, but even in the examination papers there is much scope for infelicity in choosing questions. In pass examinations the questions cannot be too straightforward; they must be absolutely unambiguous and the terms and expressions employed should be those which are commonly employed in the subject, and they should not be the special creations of one special school or teacher. In the present issue of THE LANCET we publish a letter in which complaint is made of one of the questions set at a recent examination of the University of London. We are not entering into the question whether the complaint is well founded or not, but if it be true that a large proportion of the candidates had never heard the expression on which the question was based it is clear that the expression was not in such common use as to justify its appearance in the paper of a pass examination. The main evils of examination papers are three. In the first place, the paper is liable to be too long unless the examiner takes the trouble to estimate, roughly at least, how long an adequate answer would take to write. It has been suggested that an examiner should be required to furnish with his set of questions typical written answers to his own questions. This would be perhaps rather hard on the examiner but it would certainly be very interesting to see the results. Secondly, a by no means infrequent fault is the employment of the rarer names for morbid conditions; it is better in an examination paper to speak of whitlow than of paronychia and of hip disease than of morbus coxæ. We have known instances in which each of these terms has caused much distress in the minds of many candidates. It may be urged that any well-educated candidate should be acquainted with these terms; that may be, but when the written question is such as this, "Describe the causes, symptoms, and treatment of morbus coxæ," the chance of obtaining a correct answer is made to depend not on the candidate's knowledge of the disease but on the chance of his knowledge of one of its rarer names, and that is a very different matter. It may be that the candidate possesses a good knowledge of disease of the hip, both theoretical and practical, but if it should happen that he has never heard or has forgotten "morbus coxæ," he is utterly unable to answer the question. Success in this case is made to depend not on a knowledge

of the subject but on a knowledge of a part of its nomenclature. It may be urged that the nomenclature is a part of the subject; that is true, but it is surely the least important part. Examiners should always discriminate between a knowledge of names and a knowledge of things. The two are very commonly confused in the teaching of elementary science. A third fault to be found in examination papers is the insertion of questions which need for their answer a knowledge of very recent researches. It is not very difficult for an examiner to keep *au courant* with the most recent advances, but it is too much to expect that a candidate should know all about some recent investigations or methods which have not yet appeared in any English text-book. Some examiners are specially prone to err in this direction.

It is, however, in the *viva voce* examination that the difference between good and bad examiners shows itself most clearly. Some men are born good examiners; they have a natural aptitude for the work but training also counts for much. We may parody BEN JONSON'S line and say "a good examiner is made as well as born." A good examiner improves as the years go by, and even a bad examiner may not be so bad at the end of his term of office as he was at the beginning. As a rule, an examiner gets his first work in examining while he is acting as a demonstrator and his knowledge of the work steadily increases with practice. The faults usually manifested by the examiner in a *viva voce* examination are these. An unskilled examiner is inclined to have an exaggerated idea of the knowledge which a candidate should possess but time usually cures that. But he should always bear in mind that what appears simple and obvious to him may be obscure and difficult to a candidate. He must also remember that the average candidate is more or less nervous. There are a few candidates who are unaffected by the severest examinational ordeal but the average candidate is in an uncomfortable frame of mind. It may be said that it is lack of knowledge that makes a candidate nervous; but it is not so necessarily, though doubtless the knowledge of the existence of numerous holes in his armour may tend to daunt the candidate, but even apart from this the mere fact of being examined has a very disturbing effect. This nervousness tends to drive all his knowledge from the candidate's mind. A good examiner will endeavour by simple and easy questions to set a candidate at ease. It is said that the late Sir GEORGE HUMPHRY, when he was examining in anatomy and he saw that the candidate was nervous, would always ask the candidate the structures passing behind the internal malleolus. There is probably no medical student who could not answer this question by the time that his anatomy examination arrives, especially as a well-known mnemonic exists to assist the memory. When the candidate finds that he has answered correctly he regains confidence and his memory returns to him. In this way a good examiner is enabled to estimate fairly rapidly whether the candidate has a good knowledge of his subject or not. It has been well said that examiners are divisible into those who try to find out what a candidate knows and those who try to find out what a candidate does not know. The distinction is very real. A good examiner endeavours to find a part of the subject which the candidate knows; if his first questions do not meet with accurate replies he changes the subject and ultimately he finds some portion with which the student is familiar. The bad examiner acts in an exactly opposite way. If the candidate appears to know the subject first started he leaves it immediately and tries another until he finds one about which the candidate knows little and at that subject he remains fixed until the appalling ignorance of the candidate is manifest. With the former examiner the candidate will give of his best, poor though that best may be; with an examiner of the latter kind the candidate never does himself justice. He does not receive credit for the knowledge which he really does possess. A man may fail at a *viva voce* examination with one examiner but pass with another, and yet the standard of the second may be as high as that of the first. Even the tone of voice used by the examiner or the mode of asking the questions may make a great difference to the candidate. Many have pleasant recollections of long-past *viva voce* examinations where a sympathetic and careful examiner drew their knowledge from them. Some examiners endeavour to hide from the student any expression of approval or disapproval and some even endeavour to lead a candidate along a wrong path. This is hardly justifiable, and, indeed, we think a candidate has a certain amount of right to know that he has answered correctly. It is useless to attempt to disguise the fact that there are bad examiners. Everyone will agree that there are lecturers who are quite unsuited to be lecturers, though they may be learned physicians or skilful surgeons. In the same way even eminent members of the profession may be quite unsuited to be examiners. Examinations are by no means perfect and though as a whole the results are reasonable, yet lecturers and "coaches" know well the uncertainty of examinations and that the race is not always to the swift.

Can anything be done to do away with the evils to which we have referred? First, as to papers. There should undoubtedly be supervision. In some examining bodies the examiners in different subjects criticise each other's papers and in others a special board is appointed the duty of which it is to see that only suitable questions are set. Some method of supervision is essential and the supervisors, whoever they may be, should veto not only questions which they are sure are unsuitable but also any which are in the very least doubtful. As to the *viva voce* examination, every candidate should have two examiners at the same time, so that there may be an opportunity for a candidate to retrieve his position if his unfortunate answers have not been due merely to want of knowledge. There is much to be said for the open examination where at the *viva voce* examination any member of the University may be present to listen to the questions and answers. It might, it is true, in some cases tend to increase the nervousness of the candidate but it would at least tend to check the faults of some examiners. But we can imagine some irate examiner exclaiming, "Have candidates no faults?" Indeed, they have many and great but these do not form our subject to-day. Candidates are often very trying to an examiner who is endeavouring to do his best by them, and their ignorance is sometimes wonderful, but it is of examiners that we have written to-day. We have endeavoured to show that some of the

evils of examinations are removeable by care in the choice and the training of the examiners. While examinations persist as the method of eliminating the unsuitable the utmost care should be taken to make them as free from fault as may be.

Annotations.

"Ne quid nimis."

THE LONDON MILK-SUPPLY: A SERIOUS REVELATION.

AT a meeting of the London County Council held on Nov. 17th the public health committee presented a report upon the steps which it had taken since July 1st ult. in accordance with the authority delegated to it by the Council under Part IV. of the London County Council (General Powers) Act, 1907, in dealing with the question of the milk-supply in connexion with tuberculosis. The report states that—

A veterinary inspector has been appointed for the purposes of this Act, for the inspection of cows at farms outside London which supply milk within the county, and an arrangement has been made with the director of the Lister Institute for the examination of samples of milk taken under the Act. The first quarterly return of our action is now due, and for convenience we have extended the period under review to Oct. 10th, 1908. In the period in question we have had under consideration the method by which the Council's power can be most efficiently and economically exercised with a view to the protection of the London population from the risk of consumption of tuberculous milk. As the Council's powers have not been in operation long enough to allow of our reporting in detail upon the whole question, we think it well to submit the results of the examination of samples of milk and of veterinary inspection of the farms to the date already mentioned.

During this time 204 samples of milk have been taken, 60 of which were of milk carried by the London and North-Western Railway Company, 48 by the Great Eastern Railway Company, 60 by the London and South-Western Railway Company, and 36 by the Great Western Railway Company. The examination of 92 of these samples has been completed by the Lister Institute, with the result that 22 (that is, a percentage of 23·9) have proved to be tuberculous. The Council's veterinary inspector has visited 20 of the farms from which the samples were taken and inspected the animals at 19 of them, it being proved that the remaining farm had not sent the sample of milk to London. As the result of clinical examinations nine cows were at once reported by the Council's veterinary inspector to have tuberculous udders. Another cow has subsequently proved to have a tuberculous udder, making ten cows in all proved to be suffering from this disease. The owner or manager at once undertook not to send to market in London more milk from these cows.

The cost incurred by the Council in carrying out the provisions of Part IV. of the Act, for the period covered by this report, is estimated not to exceed £100.

It does not require much expert knowledge to realise the gravity of the state of affairs revealed by this research. The results are so striking that they claim the attention not only of the London County Council but of Parliament. That very nearly a quarter of the milk samples taken at random from the metropolitan supply should prove to be tuberculous affords a grave reflection upon the present provisions for its regulation. Year by year authoritative opinion tends more strongly to proclaim the frequency of alimentary infection in tuberculosis, and it is now the plain duty of the Government to pay attention to its expert sanitary advisers. It may seem useless to urge the discussion of a departmental measure at a time when such large issues as licensing and education are before Parliament but we make bold to consider that a "Pure Milk" Bill such as Mr. Burns was to have introduced in the summer session, but which has not yet seen the light, provided it be wisely drafted, will prove of no less vital importance to the country than larger Government measures which do so much more for their promoters' political reputation. Such a Bill will, we hope, be the speedy outcome of this disquieting report. In the meantime the fruits of the modest £100 which the public health committee of the London County Council has spent in the matter should result in a special grant being made with which to carry on wider investigation. We trust that our readers will take every opportunity of making known the statements contained in this report. If medical men in family practice in London were to tell the mothers under their charge that there were only three chances to one in favour of obtaining for their children milk free from the active germs of a terrible disease, such a strong public opinion would be formed that Members of Parliament for metropolitan constituencies might find themselves being heckled with considerable vigour as to what they intended to do to prevent the children of the nation from being poisoned systematically.

DAMPNESS AND DISEASE.

THE subject of dampness in its bearing on health does not seem to have received serious detailed study, or, if it has, very little light has been thrown on the exact way in which dampness acts as an etiological factor in disease. It is easy enough to suggest why dampness should lower the resistance of the human body to disease, but why in particular it appears to encourage such ailments as rheumatism, neuralgia, and diseases of the respiratory tract is not so apparent. The risks attending the sleeping in a damp bed can be understood, because when clothing is damp its function—viz., that of insulation—ceases and it no longer provides against the body losing its heat and so a chill is engendered, and a chill may bring almost any disease in its train, for a chill is nothing but a weakened resistance. Does the dampness of the air or of the soil act in a similar way? It is probable, for dampness permeates almost all materials and therefore life in a damp atmosphere means a body exposed to an undue loss of that animal heat which is necessary to keep the organism strong and vigorous. Conversely, a dry air, though intensely cold, is perfectly healthy so long as the individual protects or conserves his calorific status by wearing suitable non-conducting clothing. The analogue of the electric current is suggested. In dry countries the electric wires are frequently bare, requiring no insulation, whereas in damp places the leakage of current would be considerable if the wires were not well covered with insulating material. There are those who believe, further, that when dampness emanates from the soil it may carry with it disease-producing entities and, moreover, a moist environment is more congenial than is a dry one to the growth and development of micro-organisms. Indeed, when exposed long enough to very dry air some organisms may be destroyed. Dampness implies stagnation, a gloom in which evil things are lifted from the soil and kept suspended and brought within reach of the human organism. It is thus not difficult to generalise about dampness in its relation to disease but so far its influences have not been susceptible of really correct measurement. That it is associated with disease is evident from the instances of health being improved when the individual is removed from a damp to a dry locality.

NEALE *v.* THE BARTITSU LIGHT CURE INSTITUTE, LIMITED.

IN this action, which was tried before Mr. Justice Grantham and a special jury, the plaintiff, Dr. A. E. Neale, sued the defendants for damages for breaches of an agreement, and the defendants counter-claimed for damages, alleging negligence and incompetence on the part of the plaintiff. The plaintiff was awarded by the jury £600 damages on his claim and obtained a verdict as defendant to the counter-claim, judgment being given in his favour and a stay of execution refused. The agreement in respect of which the damages were given secured the services of the plaintiff as medical superintendent of the institute upon terms safe-guarding him against loss of dignity and against any allegation of ethical misconduct. He was to have entire control of the treatment, he was

to be responsible for the admission of patients, and no advertisements of the institute were to be issued without his knowledge. In spite of this, during the plaintiff's absence on a holiday a pamphlet was issued advertising the treatment with testimonials as to its effects printed in it. Evidence was given by Dr. A. G. Bateman, general secretary of the Medical Defence Union, to the effect that the document was such that had it been proved to be issued with the plaintiff's knowledge it would have led to his appearance before the General Medical Council with the probability of the removal of his name from the Register. Responsibility for it was afterwards acknowledged by Mr. Barton-Wright, the managing director of the defendant company, who admitted in the witness-box that his remuneration as such was dependent on the dividends earned and that finding the receipts falling off he had issued the pamphlet complained of at his own expense. The same witness alleged complaints by patients with regard to their treatment by the plaintiff. The jury found as stated above, and the plaintiff is entitled to congratulation upon the result of the trial. That the advertisements should have been issued in defiance of such an agreement as his will serve as a warning to medical men entering upon contracts with commercial companies providing treatment of a medical character. The result of the action shows that clauses can be introduced of sufficient stringency to protect the reputation of the medical man and that a court of law will recognise and enforce them. But we feel that Dr. Neale ran some risk in associating himself with the Bartitsu Light Cure Institute, Limited.

ASCITES IN ENTERIC FEVER.

IT might be thought that the long list of complications of a disease which is so common and has been so much studied as enteric fever was exhaustive. But in the *American Journal of the Medical Sciences* for November Professor McPhedran of Toronto has called attention to a complication which, so far, appears to have escaped observation—ascites. During the past three years no fewer than six cases in which this complication was present have come under his observation. In all the effusion occurred during the illness and persisted for from 10 to 14 days. It disappeared in all but one during convalescence. In all the cases the illness was severe, but in only one were there hæmorrhages or symptoms of peritonitis. In the most marked case the patient was a married woman, aged 33 years, who had two children. She was admitted to hospital very ill, with a temperature of 104° F. After a few days rose spots, enlarged spleen, leucopenia, and the Widal reaction showed that the disease was enteric fever. The abdomen was never distended but remained relaxed throughout. The attack proved severe and protracted. In the third week both flanks were full in the dorsal position and the note on light percussion was dull to the nipple line, but on deeper percussion was amphoric. Fluctuation was easily demonstrated. When the patient was turned on her side the upper flank became concave and tympanitic, and the dependent one full and rounded with fluctuation and well-marked dulness to the parasternal line. That these signs were not due to fluid in the colon was shown by the fact that a copious enema had no effect on them. A purgative was then given; it acted freely without affecting the signs. The quantity of fluid diminished twice and then increased again. Finally, it gradually disappeared, leaving the flanks retracted when the temperature became normal. In a second case a labourer, aged 22 years, was admitted into hospital on Sept. 22nd, 1905. He had enteric fever in the preceding year, but the symptoms of the disease were now marked—the usual temperature, diarrhœa, moderate abdominal distension, rash on chest and abdomen, enlarged spleen, leucopenia, and the Widal reaction. The illness was protracted, there being apparently a series of relapses. Signs of ascites were apparent on Oct. 23rd and were marked until Dec. 6th, when they gradually diminished and disappeared in 10 days. The abdomen was flaccid throughout the illness and was not tender on deep palpation. In one case the ocular tuberculin reaction was negative and in another it was positive and the effusion appeared to be due to tuberculous peritonitis. In at least four of the six cases the ascites appeared to be due to the enteric fever, but its immediate cause cannot be stated. Professor McPhedran suggests that mesenteric glands may have been greatly enlarged, causing slight irritation of the peritoneum and effusion. Another hypothesis is that the effusion was due to toxæmia. It may be remembered that even in cirrhosis of the liver the ascites, which was supposed to be due to obstruction of the portal system, is by modern pathologists, attributed, in part at least, to irritation of the peritoneum by alcohol or other toxic substance. We may point out that peritonitis without perforation is a rare but recognised complication of enteric fever. An interesting example was recorded in our columns by Mr. C. G. Watson.[1] Dieulafoy has explained this condition as due to infection of the peritoneum by the typhoid bacillus in the same manner as the pleura (in typhoid pleurisy) or bones (in typhoid periostitis) may become infected. Possibly the cases of ascites reported by Professor McPhedran are of a similar nature, differing only in the fact that the peritonitis is of such mild form as not to give rise to the usual symptoms of pain and so forth. Perhaps also the prostrated condition of the patient, which Professor McPhedran says was present in all his cases, rendered the patient somewhat insensitive to pain. But whatever the explanation his observations are remarkable and will probably lead to records of other cases of this previously undescribed complication of enteric fever.

ANCESTRAL BEER-DRINKING.

"WOE unto him that giveth his neighbour drink, that puttest thy bottle to him, and makest him drunken also." The passage, a denunciation of cynical conviviality, is part of "the burden which Habakkuk the prophet did see." Our Bible-reading ancestors seem to have paid no attention to this and similar passages, for, as lately as the beginning of the nineteenth century, hosts were not supposed to have treated their male guests properly till they had made them drunk. In ordinary life, when not entertaining guests, the men of the seventeenth and eighteenth centuries seem to have been prodigious drinkers. Working men, now so denounced for an ancestral tendency towards the consumption of beer, seem positively to have gloried in their cups. Benjamin Franklin, between 1757 and 1775, describes the daily beer-drinking of the London printers. These skilled workmen, who required to keep a clear head at all times in the performance of their excellent work, took each man a pint of beer before breakfast, a pint with that meal, a pint during the morning, a pint at early dinner, a pint at 6, and a pint when work ended. "This makes three quarts," as the late Sir Walter Besant remarked in his delightful "London," "without counting any beer that might be taken in the evening." This beer was, of course, mostly "small beer," of which the modern representative is apparently "four-half." Sir Walter Besant also describes a notable family of the time of Charles II., whose accounts he had studied. They lived some 15 miles from London in a seven-roomed house, and the household consisted of a young married couple, a brother, "Mr. Arthur," four maids and a baby, and a gardener out of doors. They seem to have been persons of

[1] THE LANCET, May 6th, 1905, p. 1197.

good repute, but they are an object-lesson to us timid moderns. For, exclaims Sir Walter Besant, they drank, according to their accounts, "two kilderkins, or 36 gallons, of beer every week! 144 quarts a week! 21 quarts a day! It means nearly three quarts a head. This seems impossible. There must have been some external assistance. But it is not really impossible." Small beer was the national beverage and took the place of tea, then 60*s.* a pound, and of spirits, of which the family seem only once to have bought a bottle. The family drank much home-made wine besides and on occasion bought a cask of wine containing 42 gallons (a tierce). Yet they kept a fairly lavish table at the same time though their consumption of milk and bread was minute. It cannot, therefore, be maintained that they were an abnormal instance of merely old-time beer-drinking. It would be interesting, however, to know how long "Mr. Arthur" lived, for instance, and from what he died. Old necropsies yield curious information as to the state of the liver. The great Dr. Samuel Johnson is known to have numbered cirrhosis of the liver among his other grave ailments, such as scrofula, an epileptic tendency, gravel, and dropsy.

THE SERUM TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.

EPIDEMIC cerebro-spinal meningitis is attended by such a nigh mortality that any treatment which gives promising results deserves a trial. As was shown at the discussion at the last meeting of the British Medical Association there is now considerable evidence[1] that a serum prepared from the horse in a similar way to that for the treatment of diphtheria exercises a markedly beneficial effect. Such a serum was first produced in 1906 by two German workers, Kölle and Wassermann, by inoculating horses with both dead and living cultures of the meningococcus. Then Kromer treated 17 cases of cerebro-spinal meningitis by injecting hypodermically from 20 to 30 cubic centimetres of serum and repeating the injection on the second and third days. In 11 cases the serum was on the second occasion injected into the spinal canal. Only five of the patients died. In 1907 Schone treated a series of 30 cases with a death-rate of 28 per cent. against 53 per cent. in other cases. Of many serums manufactured the best appears to be one prepared by Dr. Simon Flexner at the Rockefeller Institution, New York. In monkeys he produced meningitis by injection of cultures of meningococci through a lumbar puncture. The animals for the most part rapidly died with lesions resembling those of cerebro-spinal meningitis in man, but serum treatment proved remarkably successful. In the *Edinburgh Medical Journal* for October Dr. Claude B. Ker has reported most favourably on the value of Flexner's serum in the recent epidemic of cerebro-spinal meningitis in that city. The usual dose given to children was 30 cubic centimetres, which was injected into the spinal canal after removing as much cerebro-spinal fluid as would flow on lumbar puncture. The dose was usually administered daily for three or four days. In favourable cases there was usually a lower temperature on the next day and there were frequently less delirium and some return of consciousness. The cyanosed face assumed a more healthy colour and the rigidity of the neck diminished. Occasionally the disease terminated in crisis—a point on which Dr. Flexner lays great stress, as the natural tendency is to termination by lysis. The mortality rate was 42·3 per cent., against 80·5 per cent. for the cases otherwise treated. Other writers have published even better results from this serum. Dr. A. Gardner Robb in the recent Belfast epidemic had a mortality of only 30 per cent. Observations made in the City Hospital Laboratory, Edinburgh, by Dr. T. Lauder Thomson show that the injections had a remarkable action on the cerebro-spinal fluid. Before the injections the fluid was sometimes very turbid and contained many extra-cellular and intra-cellular organisms. The extra-cellular ones disappeared early and the staining properties of the diplococci altered, and in one or two days they appeared to disintegrate and it was difficult to grow cultures from them. Dr. Ker has also tried several other serums but he finds that Flexner's gives the best results and that the serum prepared by Kölle and Wassermann comes next. In the *Boston Medical and Surgical Journal* of Oct. 22nd and 29th Dr. F. T. Fulton has reported good results from Flexner's serum. In nearly all the cases in which there was reason to hope for benefit an improvement was coincident with administration of the serum and recovery gradually took place. The total mortality was 37 per cent. and on eliminating moribund and chronic cases the mortality was only 20 per cent. The effect on the cerebro-spinal fluid was even more striking. In all but one case the purulent or turbid fluid became clear and the meningococci disappeared.

[1] THE LANCET, August 15th, 1908, p. 472.

LAMP EXPLOSIONS.

Mr. William Thomson, F.I.C., F.R.S. Edin., who has for several years conducted for the Manchester and Salford Sanitary Association an investigation into the causes of lamp explosions, has brought it up to date in a report just presented to the association. The report confirms the conclusions of THE LANCET Commission on Dangerous Paraffin Lamps, published in THE LANCET of Jan. 4th, 1896. It runs as follows:—

Since my last report of the 31st March, 1906, the chief constables of Manchester and Salford have passed to me through you for investigation the remains of six lamps which were alleged to have exploded during the year 1906, and of five lamps during the year 1907, the descriptions of which are given in the table annexed hereto. You will see from this table that 10 lamps out of the 11 are of Queen Anne type, seven of which are without a side tube and three with one. The oils employed in the lamps which exploded were obtained only in four cases out of the 11, two having a flash-point of 85° Fah., one of 83° Fah., and the last 91° Fah. This shows that the oils of the Russian type are more likely to cause explosions than either the low flash-point oils of the American type or the high flash-point oils of the Scotch type. It may be interesting to review the number of alleged explosions of oil-lamps which have occurred in Manchester and Salford during the last 12 years (1896-1907) as follows:—

	Explosions.		Explosions.
In 1896	15	In 1902	4
,, 1897	12	,, 1903	4
,, 1898	18	,, 1904	4
,, 1899	17	,, 1905	3
,, 1900	9	,, 1906	6
,, 1901	8	,, 1907	5

In 1908 up to the present time (Nov. 17th) none.

On comparing this with my previous reports it will be observed that a marked diminution has taken place in the number of alleged lamp explosions since the association first entered upon this investigation, indicating great improvement in the construction of lamps. The number of explosions would, I think, be still further reduced if the length of the wick tube were increased.

Details of the Lamp Explosions in 1906 and 1907.

March 27th, 1906 (Manchester).—Supposed to have originated by the bursting of a paraffin lamp which had been left burning. The bedding was on fire. Damage about 30*s.* Queen Anne burner with side tube. Flash-point of oil, 91° F.

April 5th (Manchester).—Lamp exploded whilst standing on the kitchen table, setting fire to the table and dresser. Duplex burner. No oil sent.

April 7th (Manchester).—The tenant of the house was about to remove the table in the kitchen when the lamp exploded and set fire to a table cloth and apron, also doing damage to the kitchen floor. Queen Anne burner without side tube. Flash-point, 85° F.

June 10th (Manchester).—The tenant was moving a paraffin lamp in the bedroom when it exploded in her hand. The flames were put out before any damage was done. Queen Anne burner with side tube. No oil.

Sept. 2nd (Salford).—Lamp exploded whilst standing on the table. Set the curtains on fire. Damage 2*s.* Queen Anne burner without side tube. No oil.

Nov. 6th (Manchester).—Paraffin lamp exploded, setting fire to some clothing in the kitchen. Damage about 8*s.* Queen Anne burner without side tube. No oil.

March 28th, 1907 (Manchester).—Lamp exploded whilst standing on the table. The curtains were set on fire. Queen Anne burner without side tube. Flash-point, 83° F.

April 2nd (Manchester).—Lamp exploded whilst hanging on the back window frame. Set fire to the furniture. Damage £17. Queen Anne burner without side tube. No oil sent.

April 7th (*Salford*).—**Paraffin lamp burst. This lamp was attached to an incubator which was in a box in the cellar of the house. Damage to box, incubator, and chickens about £5. Queen Anne burner without side tube. Flash-point, 85° F.**

April 20th (*Manchester*).—**Lamp exploded whilst standing on the mantelpiece. The occupant of the house stated that it was burning a low light. Queen Anne burner with side tube. No oil obtainable.**

August 15th (*Manchester*).—**Questionable explosion with paraffin lamp. It is suggested that a cat knocked the lamp off the table. Queen Anne burner without side tube. No oil obtainable.**

EXTRAORDINARY FRAUDS IN RUSSIAN PHARMACY.

AN extraordinary series of frauds which have been perpetrated over a great part of Russia has been brought to light. According to the *Torg. Prom. Gazeta* certain German firms, manufacturers of proprietary articles, observed a marked decline in the demand for their goods from Russia, although their agents observed an increasing quantity of goods bearing their principals' labels in the pharmacies. A police inquiry was set on foot and certain suspected individuals were traced to Odessa where a large manufactory with offices and distributing organisation was discovered. The guilty parties were arrested. A long series of "pseudo-German" preparations made up of the most inexpensive substitutes were packed in irreproachable bottles labelled in perfect imitation of the original firms' articles. The business done was enormous, amounting, it is said, to £200,000 for the Odessa organisation alone. Some of the firms whose goods have been supplanted by the imitations are household names in Germany. The German Union for the Protection of German Patents is claiming damages on behalf of the sufferers to the extent of £50,000. That this is only part of a widespread system is evident from the statement of the *Yuzhny Pharmatzeft* ("The Southern Pharmacist") to the effect that an inquiry has revealed that over 58 per cent. of pharmacies and pharmaceutical stores sell "falsified" products, though not in the same gross form as was discovered in Odessa where the disinfectant xeroform was "made" from bricks, sirolin from water, sugar, and colour, and thiocol, tannalbin, and somatose from mixtures of soap, lime, and dyes. Various cheap salts, including table salt, were substituted for such well-known products as quinine, phenacetin, and pyramidon.

THE THERAPEUTIC APPLICATIONS OF SODIUM PERSULPHATE AND OTHER OXIDISING SUBSTANCES.

WITHIN the last few years considerable use has been made of various highly oxygenated products, particularly the perborates, peroxides, and persulphates. Their value depends upon the liberation of nascent oxygen or hydrogen peroxide when brought into contact with moisture. Sodium perborate liberates about 10 per cent. of active oxygen, sodium persulphate about 13 per cent., and calcium peroxide about 11 per cent. Of these substances, all of which are non-proprietary, sodium persulphate is probably the least known. It is of interest, therefore, to make reference to *Merck's Report* for November where its properties and therapeutic uses are described. In the presence of water sodium persulphate decomposes into sodium sulphate, sulphuric acid, and active oxygen, the reaction being facilitated by elevated temperatures and the presence of oxidisable matter. If it be desired to avoid the production of free sulphuric acid the persulphate may first be mixed with one-and-a-quarter times its weight of sodium carbonate. In the form of an aqueous solution it is useful in strengths ranging from 3 to 10 per cent. as a gargle and as a dressing. At first only superficial wounds and lacerations were treated, with the result that the wounds all healed within a day. It was then applied to ulcers, infected wounds, incised furuncles, and, finally, to all wounds requiring a moist dressing. It has also been employed for disinfecting the skin prior to operations and on the wounds during operations; for example, in the extirpation of small cysts and the excision of foreign bodies. In such cases the wounds healed rapidly, small, non-infected ones generally in one or two days, while purulent ones soon granulated and closed. In the treatment of small ulcers sodium persulphate is mixed with an equal weight of powdered talc and used in the form of a fine dusting powder. It has generally been found that a 5 per cent. solution is sufficiently strong to give good results in purulent wounds and a 3 per cent. solution in simple wounds. Sodium persulphate has been tried in gonorrhœa without producing any other effect than a lessening of the discharge. The only side effects that have been noticed were a slight reddening and inflammation of the skin in children with a very sensitive skin. It cannot be used to disinfect metallic instruments as it rapidly attacks them. Sodium persulphate possesses advantages over most other antiseptic substances when used in the form of bandages or other dressings from the fact that it is readily soluble, odourless, does not stain the skin, and is non-toxic in the quantities that are usually employed.

THE SOCIETY OF APOTHECARIES.

THE Master and Wardens of the Society of Apothecaries entertained a large company at dinner at the hall of the Society on Tuesday, Nov. 24th, the occasion being known as the Lord Mayor's Day dinner. The chair was occupied by the Master, Mr. F. Gordon Brown, who was supported by the Senior Warden, Mr. R. Bligh Wall, and the Junior Warden, Mr. A. T. Norton. The guests included, amongst others, the Lord Mayor, Sir Richard Douglas Powell, Sir James Reid, Sir John Tweedy, and Sir Francis Laking. The loyal toasts finished, the Senior Warden rose to propose that of "The Lord Mayor, Sheriffs, and Corporation of the City of London." In acknowledging this toast, the Lord Mayor referred to the public health work of the Corporation and to the activities of the port sanitary officials in fighting disease and death. He welcomed the presence there of so many distinguished members of the medical profession and particularly the representatives of the great governing bodies. The Junior Warden in proposing the toast of "The Colleges of Physicians and Surgeons" referred to the question of a combination of the examining corporations of London which could grant the joint qualifications of physician and surgeon. Sir R. Douglas Powell, replying for the Royal College of Physicians of London, said that it had taken a great number of years to organise the medical profession but the question of an equalised qualification was still a difficulty. Referring to the dinner, he congratulated the society on its compatibles. Sir John Tweedy, who in the absence of Mr. Henry Morris, the President, replied for the Royal College of Surgeons of England, apologised for dealing with the question of qualification, but he was prompted to do so by the remarks which fell from the Junior Warden. He referred to the rapidly increasing number of universities growing up like mushrooms all over the country, a growth which made it more difficult to bring the medical degree to a universal standard. He thought it desirable that the educational centres should combine in the matter of conferring a degree which should be the evidence of a uniform test. During the evening the honorary freedom of the Society of Apothecaries was presented by the Master to Sir Francis Laking who, in acknowledging the honour done to him, compared the work of the general practitioner of many years ago with that of to-day. He thought that students, in addition to their clinical practice at the hospital, should spend some time with a general practitioner so that they might get an insight into the common

ailments met with in general practice. The proceedings terminated with the toast of "The Society of Apothecaries," proposed by the Lord Mayor, to which the Master replied in suitable terms. In spite of the somewhat crowded state of the charming old hall the occasion was a most enjoyable one and a good programme of music provided further for the entertainment of the guests.

THE PRODUCTION OF ALKALI BY THE BACILLUS PESTIS.[1]

THE latest addition to the very valuable series of Memoirs by Officers of the Medical and Sanitary Departments of the Government of India is concerned with the property possessed by the bacillus pestis of producing alkali when growing in broth. The author, Lieutenant-Colonel W. B. Bannerman, I.M.S., shows that the arrest of growth which occurs in plague cultures after a month or six weeks is not due to exhaustion of the medium, still less to the production of acid, but to this constant development of alkali by the bacillus. The amount of alkali produced is equivalent to 1·5 to 2·5 per cent. of normal sodium hydroxide, and this quantity which is reached in from six weeks to two months causes arrest of growth but not death of the bacillus. Neutralisation of the alkali is followed by fresh growth. An interesting sidelight on the unexpected connexion between science and religion is afforded by the fact that as artificial peptone may not be employed in the manufacture of the cultivating medium lest the religious prejudices of certain sections of the Indian community should be offended, it has been necessary to devise a method of preparing broth by digestion of meat in dilute hydrochloric acid which avoids this difficulty. The broth as made according to this method, devised by Dr. F. Maitland Gibson, appears to be very suitable for the growth of bacillus pestis.

A NEW MICRO-ORGANISM CAUSING DISEASE IN THE CAT.

FOR some years past an epidemic has occurred during the winter among the cats in the domain of La Gastine (Eure). During February of this year the body of a cat which had died from this disease was sent to the laboratory of M. Danysz, owing to the fact that the proprietor of the domain had employed the Danysz cocco-bacillus for the destruction of rats, and he supposed that the epidemic among the cats might be derived from this source. The disease was investigated by M. M. Z. Skrzynski, who found that it was due to a hitherto undescribed organism belonging to the group of the colon bacillus. It proved to be entirely different from the Danysz bacillus, since it was pathogenic for the cat but practically harmless to rats and mice. His results are described in detail in the August number of the *Annales de l'Institut Pasteur*, and they constitute an interesting addition to the pathogenic members of the colon group of organisms. The organisms have the form of rods with rounded ends but also occur in ovoid forms. They never form filaments. They can be distinguished from typical colon bacilli by the fact that they are immobile in all media and under all conditions of culture, by the appearance of the cultures on agar, and by the fact that they do not cause fermentation of the cane-sugar in a medium containing agar and sugar. The organism is readily stained by the ordinary aniline stains but does not retain the stain in Gram's method. It does not form spores or possess a capsule. It grows well on all ordinary culture media between the temperature limits of 12° and 46° C. with an optimum at 37° C. The cultures on certain media acquire a fœtid odour like that of bacillus coli after two or three days' growth. The organism grows with great rapidity in bouillon which becomes turbid two or three hours after inoculation. It does not liquefy gelatin. On agar the culture becomes apparent after from four to six hours. The colonies are shiny and moist, with regular margins slightly raised in the form of a cone, with a central white point. In a culture of several days' growth long crystals become visible, evidently due to the precipitation of phosphates. The investigation of its bio-chemical properties shows that it has no appreciable action on protein substances but that it produces indol. It also produces reducing substances but its power in this direction is from 10 to 12 times less than that of the bacillus coli. Experiments showed that this organism produced fatal disease in cats but that immunity could be produced either by inoculation with attenuated cultures or by preparing a specific serum.

[1] Production of Alkali in Liquid Media by the B. Pestis. By Lieutenant-Colonel W. B. Bannerman, M.D., B.Sc.Edin., I.M.S. No. 33 (New Series) of the Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. Calcutta. 1908. 12 pp. Price 5 annas (6*d*.).

JUSTICES AND DIRTY MILK.

ALTHOUGH two samples of milk taken at Eastbourne recently were each found by the analyst to contain a trace of pus and blood, the prosecuting authority met with failure when the cases came before the justices. The milk was genuine and free from preservatives, but, in view of the discoveries made, it was thought necessary in the interests of the public health that proceedings should be taken. In the case that was taken first objection was raised to the certificate of the analyst on the ground (1) that it was too vague; and (2) that the analyst did not certify whether any change had taken place in the milk. The justices upheld the latter objection and the case was dismissed, the presiding magistrate remarking that he thought "trace" was also too vague. In view of this result the prosecuting solicitor did not proceed with the second case. The decision of the justices is rather surprising, and not the less so seeing that it is said that immediately after hearing the case referred to they fined a dairyman for selling weak milk. Weak milk would be far preferable to milk containing pus and blood, no matter how infinitesimal the quantity might be. However, it is to be hoped that the sanitary authority concerned will cause a thorough inspection to be made of the two farms which supplied the milk from which these samples were taken, and, so far as the present laws will permit, will call upon the farmers to remedy any evils that may be found to exist.

DANGEROUS PERFORMANCES.

WE have had occasion from time to time to record serious accidents to performers of foolhardy feats at public shows, accidents which in more than one instance have had a fatal ending. In August last, for instance, we called attention to the fate of an unfortunate lion-tamer's assistant who was mauled to death at a Gloucester theatre by one of his dangerous charges. Accidents of a similar nature have happened in the past to high-wire walkers, chariot drivers, acrobats, "parachutists," and others, who daily take their lives in their hands to gain the means of living. The most unfortunate of these episodes which is within our recollection happened at a London music hall on the night of Nov. 23rd in the course of a "fancy shooting turn" by a performer described as "Clementine—Lady Expert, Queen of Firearms." One of her feats was based on the well-known William Tell act, in which the performer discharges a rifle at a ball poised above an assistant's head. In most of such performances, we understand, the end is attained by some sort

of trick, real bullets not being used. In this instance the assistant, a man named Lee, who is said to have performed with "Madame Clementine" for some time, stood with the ball balanced on a little wire stand above his head. Two shots were fired at him, both of which, by pre-arrangement, were misses; at the third discharge, which was intended to hit the mark, Lee fell to the ground. The audience thought this was a part of the performance but a stage hand seeing something was wrong lowered the curtain. It was then found that Lee had been hit fairly between the eyes with a bullet, and he was at once conveyed to a hospital where he died. It is difficult to understand why the regulations do not prevent entirely this class of performance. A shooting exhibition, which may be undoubtedly an attractive and skilful performance, can surely be arranged without endangering a human life. In any case, if the management desired to provide its patrons with a sensational show having the appearance of being dangerous it should have insisted on the use of wax bullets or some similar device. We are quite unable to understand the attitude of the manager of the music-hall if he said, as was reported in the *Daily News*, "I never imagined that this was what we call a 'straight turn.' That is to say, I thought there was some trick about it and that real bullets were not used." If the performer had been firing real bullets night after night surely the management ought to have been aware of the fact, so that warning might have been given to scene-shifters and others who might be standing behind the scenes to beware of stray shots. It is high time that it should be made illegal for such performances to be given. For many years now acrobats and wire-walkers have been forbidden to perform in public high up in the air unless a broad net be stretched beneath them and regulations should be framed to protect other people from risking their lives to gratify the more savage elements of the popular craving for amusement. There are many feats of strength and grace and dexterity performed by tumblers and jugglers which have a certain risk attached to them but to which no exception can be taken, for although a slip might lead to a nasty accident, yet they are on a different plane altogether from the performances which are advertised justly as "sensational," and which depend upon that quality for their popularity. The kind of laxity which connives at possible manslaughter as an incident in public entertainments deserves the unmeasured condemnation of all thoughtful persons.

THE Bradshaw Lecture of the Royal College of Surgeons of England will be delivered in the threatre of the College by Sir W. Watson Cheyne, Bart., Vice-President, on Friday, Dec. 4th, at 5 P.M. The subject of the lecture will be "The Treatment of Wounds." Fellows and Members of the College are invited to attend. Students and others, who are not Fellows or Members of the College, will be admitted on presentation of their private visiting cards.

AT the meeting of the Life Assurance Medical Officers' Association, to be held at 20, Hanover-square, London, W., on Wednesday, Dec. 2nd, at 8.30 P.M., the discussion on Sir Thomas Oliver's paper on Some Insurance Problems arising out of Recent Industrial Legislation, adjourned on Nov. 4th, will be resumed. Members of the medical profession are invited to attend the meeting.

Mr. John Fairbank, F.R.C.S.E., has been appointed surgeon dentist to T.R.H. Prince and Princess Christian of Schleswig-Holstein.

MOTORING NOTES.

THE OLYMPIA MOTOR EXHIBITION.—II.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

THE Olympia show during the time of the "press" view and subsequently I discovered to be quite two different places; on my second visit I found more cars but less room or opportunity to see them in, the "public" had arrived and, judging from the vast crowds, it was everybody who wanted to see and to find out about the motor-car. I truly felt quite sorry for the really kind young gentlemen in charge of the exhibits but I likewise rather admired them, they replied to the queries of their possible clients with much patience and some of the questions were really enough to annoy a saint. While listening to some of these amusing conversations I managed to get a look at a few cars I neglected on my earlier inspection and among a good many the following should certainly receive the attention of the medical man in search of an automobile.

Messrs. S. F. Edge have always been known as most successful makers of racing and large touring cars; this year they have added to their manufacture a two-cylinder, 10-h.p. car which they seem fairly certain about, as it is sold with a guarantee extending over three years from the date of delivery. I do not know of any other firm that gives such an undertaking with their machines. The engine is the water-cooled two-cylinder (cast together) Napier, with inlet and exhaust valves operated off one cam shaft and interchangeable. The carburettor is provided with an arrangement so as to flood without raising the bonnet; those who have had the bother of taking lamps off to open the bonnet to get at the carburettor on starting will, I know, appreciate this little improvement. Ignition is by high-tension magneto and arranged so that the magneto can be rapidly detached and replaced. Transmission is by cardan shaft to a live axle; three speeds forward and a reverse are provided, the drive on the top speed being direct. The propeller shaft has universal joints at each end. The change-gear is on the gate-change system. The clutch is of the metal to metal type and runs in oil and gives a smooth and gentle engagement. The water circulation is by a gear-driven pump; another gear-driven pump also forces oil to the engine and clutch. Semi-elliptical springs insure easy riding and the tyres are of a good size, 810 × 90. A similar car with a four-cylinder 15-h.p. engine is also shown.

The 12-h.p. four-cylinder Talbot is also likely to be a popular car. The engines, 80 × 90, are cast in pairs. Ignition is by high-tension magneto, driven by a transverse spindle in front of the motor, which spindle also drives the water-pump. Alternative battery ignition is also fitted. A leather-faced cone clutch transmits the power to the four-speed forward and reverse gear-box, and so on by cardan shaft to the live axle. A tube surrounds the cardan shaft and acts as a torque rod.

An American car that has attained great favour in this country is the Cadillac 10-h.p. single cylinder two-seated runabout. A copper water-jacket is fitted round the cylinder. Transmission is by sun and planet gear, which are always in mesh. Lubrication is by a pump lubricator of the Dubrille type, driven by a belt off the hub of the fly-wheel. As the cylinder has a bore of 5 inches, starting it with the ignition advanced might have serious consequences, so a safety device is fitted; when the spark is advanced the slide obstructs the entrance to the crank, so making it impossible to start the motor until the spark lever is moved to its normal position. The ignition is by coil and accumulator or dry cell, and a double insulated spark-plug is an exclusive feature of the car, though of course any other plug can be employed. A chain conveys the power from the planetary gear box to the live axle. A chain may make a little noise, but there is this advantage over the rigid or ought-to-be-rigid propeller shaft type: it does not matter with a chain if the back axle and the gear box are not quite true with one another; with bevel and cardan shaft if the two bevels are not perfectly true with one another then worries and expense result. Standardisation absolute and accurate is one of the leading claims urged by this company on behalf of their cars, and they certainly proved their point last March, when

under the Royal Automobile Club observation three cars were picked out of their stock by the club officials. They were then entirely dismantled at Brooklands; the parts were mixed up, some taken away, and fresh ones obtained from the store; and then the three cars were reassembled and driven without any mechanical trouble for over 500 miles. This company also show their new 30-h.p. four-cylinder car.

A very novel and powerful two-seater is the 12-h.p. Sizaire-Naudin, which, fitted with a wind screen and hood, makes a fast and reliable car for professional use. The front axle is quite original; it is really the front member of the frame, and the steering-head spindles slide through the ends of this forging, and thus each front wheel is free to rise or to fall independently of the other, and a front inverted semi-elliptic spring supports the weight of the chassis. The drive is by a cardan shaft to a live axle and a tube hinged to a cross member of the chassis and fixed to the axle casing takes the torque. The change-speed mechanism is in the axle casing.

The makers of the popular little red "taxies," Messrs. Renault, have a small two-cylinder, 7-9-h.p. car which, if fitted with a different body to the one shown, struck me would make an ideal two-seater, with a Cape-cart hood and a front mica wind screen. It looked just the handy sort of car for the medical man who drives himself.

Messrs. Bentall, who have for years made parts of cars, are now turning out entire cars at their factory near Maldon in Essex. Their exhibit comprised samples of their 11-h.p. two-cylinder and 16-h.p. four-cylinder cars. Unlike in the majority of this year's cars, they have low-tension magneto, which the makers think less complicated than the high-tension. The clutch is of the internal cone type, faced with fibre and runs in oil, and is said to be very soft in action. The rest of the car follows the modern up-to-date lines and seems in every way well built and designed.

The Singer Company of Coventry have a neat little four-cylinder; the engines are 80 by 90 and give 12–14-h.p. Ignition is by coil and accumulator, as well as high-tension magneto. Cooling is by thermo-syphon, the usual water-pump being conspicuous by its absence. The gear-box gives four forward speeds, the direct being on the third, and there certainly seems an advantage in having four instead of three speeds; often, and especially in these small four-cylinders, one comes to a hill which is just too much for the top speed; with only three speeds, the second is too great a drop. With four the third is just what is often needed, and two more gear wheels is not a great addition for this advantage.

The gallery seemed very crowded, especially that part where the tyre dealers are all herded together; no end of people seemed interested in the tyre exhibits, and I should say that their makers must have booked many orders, even though some of the multitude around may have been "dead-heads." Messrs. Harvey, Frost, and Co. showed their "Baby" Car and "Garrage" vulcanisers, which certainly seemed excellent aids to the preservation of the life of a tyre. It is so true with tyres that "a stitch in time saves nine"; a small cut in a cover filled in and vulcanised may prolong the existence of that cover for many a month; ordinary stopping may, of course, stay in, but a proper vulcanised repair is much safer.

Messrs. Rotherham of Coventry had on view a large number of lubricators, oil cups, and grease feeders, components that even careful drivers who do screw up these parts may occasionally lose and which can be more easily matched by these makers than elsewhere. They also make pressure taps, needle valves for carburettors, nipples and unions for water and petrol pipes, as well as trembler blades, for both wipe and make and break commutators.

The chief feature of the accessories shown by Messrs. Brown Brothers is the autoclipse lamp; these lamps produce two distinct sets of rays, one to light the road its full width near the car, the other to project for a long distance. The long distance rays can be cut out when desired without affecting the ordinary light. In traffic by means of a small pedal all excessive glare can be immediately suppressed and when needed the full illuminating power can be resumed. It seemed to me that these lamps supplied a want of the medical motorist, especially in the country, where night trips in non-lighted country lanes may often have to be undertaken. Messrs. Brown also show a useful brake lining "raybestos" which is made of asbestos woven with brass wire and will neither burn nor carbonise in any heat. A good many people still have cars with band brakes that are lined and for these this lining will be found most efficacious; it should be attached by countersunk screws, the ends of which should be well burred over. Some drivers like a musical alarm horn; if so, they will find the Gabriel, also shown on this stand, certainly a musical one. It is worked off the exhaust gases. Occasionally it is needful to alter or replace the radiator of a car, and those who are thinking of so altering their water-cooling apparatus should inspect the manufactures of the Coventry Motor Fittings Company who in addition to the honeycomb radiator have a variety of bonnets, silencers, wings, and oil-tanks on view.

An enormous number of lubricating oils are shown, and in addition most motorists constantly receive circulars about lubricating oils and greases, and what astonishes me is the difference in price. All the makers claim increase of friction-reducing capacity, with diminished carbonising tendency; all also claim that the viscosity is such that at working temperatures they are efficient lubricants, and that their flash-point is so high that they are not liable to volatilise in the cylinder with the production of smoke. Well, medical men can easily roughly test these claims for themselves; all that is needed is the ordinary apparatus, which we all have for estimating sugar in urine, and a thermometer. I think it can be taken that if the flash-point is not far short of 500°, the oil will do for petrol engines. Take a little of the oil, heat in a porcelain dish over a bunsen flame, and stir the oil with a thermometer; occasionally bring a lighted taper near to the heated oil, if there is no blue flame—that is, if it does not flash until the thermometer is near 500°, that oil can pass muster. Another test is to see how long a certain quantity takes to run out of a burette drawn out to a fine point, and to compare the time with that taken by a similar quantity of a known good oil; if there is a great difference at the same temperature, and the oil flashes at much under 400°, reject it, even if it is given to you free of charge. It is cheaper to pay for the lubricant than to be constantly taking off the cylinders to clean away soot, the cause of pre-ignition.

The serisol terminals shown by J. Lacoste and Co. are most useful; they merely push on and contact is made and they can be released as easily. Anyone who has spent a few moments in trying to connect up a lead to a coil terminal, especially when it is underneath, will appreciate not to have to use the box spanner and nuts. These insulated terminals are adapted for coils, plugs, commutators, and accumulators. Coils trembler and non-trembler for one, two, three, and four-cylinder engines are also shown. These are fitted with the lumen trembler, which consists of two blades of different temper rivetted together, but with a space between, so that when the current is passed in the induction circuit the bottom blade is drawn to the core, but the upper one is left in contact for a shade longer and then it descends and the circuit is cut, the induced current accumulating until that time, and so the rapidity of breaks is great and the spark of good quality, and sticking of the trembler rarely occurs.

The British Bariquand and Marre Engine Company show types of their four- and six-cylinder engines. Their fitments show the care and accuracy employed, the exhaust valve lifter with hardened rollers, the perfectly ground crank shafts, and the excellent fit of the pistons. Their automatic carburettor is fitted with a primary air orifice at the side and in the spray chamber are four triangular ports normally shielded by a piston that slides up and down the chamber, so that as the suction increases this auxiliary air-supply is brought into action.

Another engine which is bound to attract attention is the White and Poppe. The crank shafts are of the built-up type and phosphor-bronze bearings are provided between each crank web. The gudgeon pin is a drive fit and a ring is sprung over to prevent any possibility of scoring. Hardened rollers are fitted to the valve lifters. Ignition is by Simms Bosch magneto.

Messrs. Benton and Stone show some excellent lubricators that can be employed either with the exhaust or forced feed type. The glasses are easily removed for cleaning and can be replaced in a few moments, and in addition a small electric glow lamp is fitted that illuminates the drips at the will of the driver.

Another interesting exhibit is that of Messrs. Willans and Robinson, Limited, who show crank shafts of vanadium steel

which is not as subject to fatigue as the usual type employed. Personally, I have had three cranks break and the makers have always explained the accident as the result of fatigue and so I welcome a steel which does not get "tired." The rough forged and finished crankshafts shown certainly look as if they would last a lifetime.

From what I gather this show has been a great success not only as regards the number of visitors but also in the direction of "business." Many practitioners seem to have grasped this opportunity to inspect and, what is more, to order a car. The majority have—wisely, I think—stuck to cars built on accepted lines and have left the certainly interesting new developments, such as the two-cycle and slide-valve types, to the man of pleasure. Probably, if he finds them reliable, next year they will more seriously compete with the Otto-cycle engine with mushroom valves. Two-seaters rightly seem to be the favourites with the medical profession, especially when fitted with a Cape-cart hood and a front wind screen. Personally I prefer the mica shield, but apparently glass front screens are the favourite. Small side doors to the body also are popular; they certainly keep the cold from the legs and feet, but a shaped rug answers as well and is less trouble to get into than the bother of opening and shutting a door every time a stop is made to see a patient. As to engines, the single cylinder still appears to hold its own, though the small four-cylinder attracts a good many; the cardan shaft and live axle look as if they are more beloved than the chain drive, still I rather think that the fashion will revert to the latter. Thermo-syphon cooling is undoubtedly increasing, and any way the friction-driven pump has gone. May it never come back! The gear drive answers well, but volumes could be written about the iniquities and worries of the "friction" drive. As to clutches, the leather-faced cone type still holds the field and if springs are inserted under the leather it always engages gently, and in addition anyone can adjust or replace the leather. With the multiple disc it usually means a mechanic or even the makers if aught goes wrong. Still, if clutches are seen to they rarely give trouble. In lubrication the tendency seems to be a reversion to the pump lubricator, driven direct or by a band off the crank or two-to-one shaft, and this is certainly more satisfactory than the one worked by pressure off the exhaust; the pressure pipe is so apt to become choked with carbon deposit, and it is a bother to get the pipe off for cleaning purposes. A great many cars are now fitted with shields underneath, which are an advantage, provided a trap-door is supplied, so that the crank case oil cock can be got at without contortions amid clothes-spoiling surroundings. This is a point I strongly advise seeing to when ordering a car. Carburettors have now reached, I suppose, a stage of perfection, but on some cars they are placed in a rather inaccessible position, and that is another point I should insist on when buying a new machine—namely, that a petrol filter is fitted, and fitted where it can be got at and cleaned, and also that the jet can be quickly removed for cleansing purposes. I came across a man held up on the road recently with a choked jet, and he had to get the exhaust pipes down before he could remove the carburettor and so take out the jet. I prefer jets that can be removed without even taking the carburettor down. The Allen-Liversidge brake, which was described in THE LANCET of Nov. 14th, p. 1463, seems so excellent that when I get my new car I think I shall specify for it to be substituted for the ordinary differential drum brake. The increase in the number as well as in the size of the ball bearings was another improvement noticed at the show.

PLAGUE IN LIVERPOOL: REPORT OF THE MEDICAL OFFICER OF HEALTH.

THE medical officer of health of Liverpool reported to the health committee that on Oct. 23rd the mate of the coal barge *Wesley*, lying in the Trafalgar Dock, who had been ailing for a couple of days, was told by a medical man who saw him to go to hospital. Late in the evening his wife, who lived with him on board, conveyed him to the hospital, which was reached about half-past eight. The man on arrival was found to be dead. The body was removed from the out-patient department to which it had been taken to the mortuary. On Monday, Oct. 26th, a post-mortem examination was made and an inquest held, the house surgeon of the hospital giving evidence to the effect that death was due to natural causes consequent upon acute blood-poisoning. As the house surgeon suspected the case might have been one of typhus fever he communicated at this stage with the medical officer of health who requested Dr. W. Hanna, the medical officer of the port (whose large experience of plague has on former occasions proved so valuable), to see the body and to obtain specimens for cultivation.

Dr. Hanna found indications of the presence of an axillary bubo and he obtained a portion of the tissues for bacteriological examination at the laboratories and a portion was also forwarded to the bacteriologist of the Local Government Board. The coffin in which the body was placed was well filled with carbolic powder and the remains were interred on the next day, the coffin being taken directly from the mortuary to the grave. Meantime, on Oct. 27th, the barge in question was thoroughly disinfected and a rat-catcher was immediately placed on board, but no rats could be found. Furthermore, a survey and a careful inquiry were made along the line of docks in the area which the barge traversed, but no dead rats could be seen or had been observed. Meanwhile, considerably over 100 live rats from the vessels with which the barge had dealings and from the sheds in the neighbourhood were sent to Professor Sir Rubert Boyce for examination and all were found to be healthy The usual proceedings were taken to keep under observation all persons who could be ascertained to have been in contact with the patient or to have had dealings with the barge, some of the probable "contacts" being in Widnes. A cat which had belonged to the patient could not be found and it may be mentioned that the cabin was found to be swarming with fleas. The articles of clothing of the deceased were either destroyed or disinfected, and some of them which had been pawned were recovered from the pawnshop and dealt with in a similar way. The bacterial investigations were pursued with great care both in Liverpool and in London, but no positive results could be obtained by either investigator, owing probably to the delay in taking the material and to the presence of large numbers of other disease-producing organisms, until the afternoon of Nov. 3rd, when positive results were arrived at.

It may be stated here that immediately the mate fell ill a man was taken on board the barge to assist in its navigation, and on Oct. 26th, before the disinfection of the quarters, his wife also went on board. The master of the barge lived at Walton and only went on board during the day. On Nov. 4th, under the terms of the Paris Convention relating to plague, the case was reported by the Local Government Board to the Foreign Office, and at the same time the medical officer informed the Consular body in the city. On the evening of Nov. 5th an announcement was made to the daily press by the Local Government Board. On the morning of Nov. 6th the wife of the man who went on board when the mate fell ill, in conformity with instructions to report herself if any sickness arose, went to the Port Office and stated that her husband had been unwell through the night and that she had been unable to get any medical assistance for him, owing to the barge being remotely placed in the dock. Dr. Hanna at once revisited the barge and the man and his wife were removed forthwith to the hospital at New Ferry, and the barge was again submitted to a further disinfection and the hatchways were closed. The barge remains in this condition now. The usual notifications were given in conformity with the terms of the Paris Convention, and Dr. R. A. Farrar of the Local Government Board visited Liverpool on Nov. 8th and has given very material assistance in investigating the origin of the first case.

With regard to the two patients, the man and his wife, in each case the illness was of a most critical nature, and although the man succumbed to the disease the woman fortunately survived and will in all likelihood recover. The patients were under the care of Dr. Hanna, and he also applied a prophylactic vaccination to the staff. The necessary delay in confirming the nature of the cases, together with Sunday supervening, gave rise to a day's delay in notification to the Consuls. The barge now is in the position in which she was left by the disinfecting staff. Fortunately the men refused to go on board her to discharge her coal, and the owners are perfectly satisfied with the course adopted.

One possible source of the disease which fell under suspicion was certain bales of rags brought round from Newcastle, the time of the arrival of the rags coinciding with the average period of incubation of plague, and there are good reasons to think that the mate may in some way have come in contact with them. The rags in question, however, had been dealt with in Liverpool and no one who handled them was any the worse for it. Moreover, as soon as they were unpacked they were dealt with in a carboniser, a process subjecting them to a high temperature and the intense fumes of hydrochloric acid. All hands at the mills remain well. The source of origin of the first case, therefore, is extremely obscure but the origin of the two other cases is abundantly evident, these persons having obviously been infected on the barge. There is very little reason to apprehend that anything further will arise in connexion with this particular outbreak and it seems hardly necessary to say that the main importance of the incidents arises not from any effect upon the public health which may ensue but from the great commercial injury which may be done to the port unless every care and discretion are exercised.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE twenty-third annual meeting of the Fellows and Members of the Royal College of Surgeons of England was held at the College on Nov. 19th. Mr. HENRY MORRIS, the PRESIDENT, was in the chair and 15 other members of Council were present. The meeting was large and it included 13 Fellows in addition to the Council and 115 Members.

The proceedings were commenced by the PRESIDENT presenting to the meeting the annual report of the Council of the College on the work of the College for the past academical year; it contained references to many matters of interest, and especially it included replies to, and comments on, the resolutions carried at the 1907 meeting of Fellows and Members. The President proceeded to mention most of the items in the report, commenting on them as he came to each. One of the more important matters transacted during the year was the poll of the Fellows and Members on the question of the admission of women to the examinations of the College.

Dr. WALTER SMITH then introduced the first item on the agenda. He asked, "How many diplomas of deceased Fellows, Members, and Licentiates who have died during the past year have been returned to the College and what steps, if any, have been taken to insure they be returned or improper use be not made of them?" Dr. Walter Smith stated that to his knowledge many diplomas of deceased Members of the College were being employed fraudulently and he thought that the Council should endeavour to obtain the return of the diplomas of deceased Members by applying to the relatives, and he was anxious to know if the Council was taking any steps to prevent the misuse of these diplomas.

In reply the PRESIDENT stated that he had heard of a few cases where the diplomas of deceased Members of the College had been used by unqualified persons, but he had no knowledge of the fact as stated by Dr. Walter Smith that the practice was at all common. As to the question if any action was being taken by the Council to insure the return of disused diplomas, he informed the meeting that every diploma of the College had attached to it a slip of paper on which was a request that the diploma might be returned at the death of the Member and the Council hoped that this would be productive of good. In reply to further questions the PRESIDENT stated that this practice of attaching the slip to each diploma had been in use only about a year and that during the past year only one diploma had been returned on the death of a Member.

The President was asked if any steps were being taken in reference to the proposed coöperation between the two Royal Colleges and the University of London, and if the holders of the present Conjoint diplomas would be entitled to the degrees of M.B. and B.S. In reply, the PRESIDENT stated that negotiations were proceeding and that if they arrived at any arrangement the future holders of the diplomas of M.R.C.S. and L.R.C.P. would also have the degrees of M.B. and B.S., but the arrangement would not be retrospective.

The PRESIDENT then called upon Mr. JOSEPH SMITH to introduce the first motion which was in these terms:—

> That this meeting thanks the Council for having for the first time in its history taken a poll of the Members of the College but regrets that the Council found itself unable to abide by the result. This meeting also trusts that the Council will shortly take a further poll of the Fellows and Members on the question of Direct Representation of Members as requested by the last annual meeting.

Mr. Joseph Smith thanked the Council for its action in taking a poll of the Members, and also for relieving the Members of all responsibility in regard to the admission of women to the examinations of the College, for, as the Council had acted in direct opposition to the votes of the majority, the Council alone was responsible. He hoped that that was only the beginning of polls of the Members; one common argument put forward against polling the Members was the great cost; but the expense was not very great, for it had cost only about £110. In regard to the second part of the motion he claimed that the Council, though composed of good surgeons, could not be in touch with the general practitioners. For 23 years this motion had been brought forward and carried every year by enormous majorities or unanimously but the Council had not taken any action in the matter. He was as anxious as anyone could be to put an end to this internal dispute in the College, and the dispute could be ended at once by admitting a certain number of Members on to the Council. Four Members on the Council or even eight Members would always be a small minority, and therefore they could never in the least degree control the action of the Council, but if Members were on the Council they could give valuable information as to the feelings and wishes of the general practitioners of the country; for instance, the action of the Council in the matter of the Midwives Bill was in opposition to the wishes of the great majority of general practitioners. He hoped that before long this small boon would be granted to the Members and when that had been done, and the Members were represented on the Council, then the President would indeed be the President of the College as a whole and not of the Fellows only.

Dr. SIDNEY C. LAWRENCE seconded the motion. He remarked that he thanked the Council for taking the poll and especially for showing how to take an incomplete and inaccurate poll. More than 3000 Members had received no card at all and 37 per cent. had received two cards apiece. He could not understand why 92 votes should be rejected merely because of a few added words. The Council had absolutely contemned the majority of 703 Members, and it had in effect said that it cared nothing for the opinions of the Members. The Council appeared to have forgotten that in 1895, at the annual meeting of Fellows and Members, a proposal to admit women to the examinations of the College was rejected by a large majority. The Council on that occasion acquiesced in the opinion of the meeting, but in this year the opinion of the Fellows and Members was asked and then rejected. As to the question of the representation of Members on the Council, when the Council took a poll of the Fellows, a large proportion of the Fellows voted for the representation of the Members. There were many reasons why the Members should be represented on the Council. First, there were many questions affecting the Members only, and these could be adequately dealt with only by Members; secondly, questions affecting general practitioners could not be understood by consultants; and thirdly, if there were Members on the Council they would serve as a channel of communication between the Council and the Members. The appointment of general practitioners on the General Medical Council had not revolutionised the business of that Council.

Dr. MICHAEL BEVERLEY moved an amendment to omit the words, "but regrets that the Council found itself unable to abide by the result." He considered that the College of Surgeons had done justice to a large body of women in admitting them to the examinations of the College. Medical women had been admitted into the British Medical Association and no harm had resulted. No harm could result from their admission to the College. He failed to see why Members should take exception to the admission of women.

Dr. D. A. HAYDEN seconded the amendment.

Mr. F. W. COLLINGWOOD expressed his agreement with the admission of women but that was not the question; the real point in the motion was whether the Council should or should not have gone in opposition to the vote of the Members.

A MEMBER complained that he had never received a voting card.

When the amendment was put to the meeting it was lost.

Mr. R. HILLS moved an amendment that the whole of the first paragraph should be omitted. It was wrong for the Council to act in opposition to the expressed wish of the Members. The amendment was not seconded and when the original motion was put to the meeting it was carried with few dissentients.

Dr. W. G. DICKINSON introduced the second motion, namely:—

That this meeting is of opinion that women when admitted to the diplomas of the College should have equal rights with men.

He quoted the opinion of counsel taken by the Council as to the admission of women, and he claimed that the Council was relying too much on this opinion. The Members had also taken counsel's opinion, and this had been to the effect that women were admissible under the Charter of the College, for the Charter spoke only of "persons." If this were so, women were not admissible under the enabling Act of 1876. He was under the impression that no other medical body had attempted to make use of the Act of 1876. If women were admissible under the Charter they were not admissible under the Act of 1876, and therefore the Council would find itself in a dilemma, for if women were admissible under the Charter they would have all the rights of the other Fellows and Members.

Dr. A. S. MORTON, in seconding the motion, said that if women were admitted they should have equal rights with men. If women accepted the conditions imposed by the Council they would be in a worse position even than the Members.

Mr. COLLINGWOOD expressed the opinion that the conferring of diplomas such as suggested would be in opposition to the spirit of the times.

The motion was put to the meeting and was carried by a large majority.

Mr. COLLINGWOOD then moved—

That the President and Council of the Royal College of Surgeons be respectfully asked to use their moral influence to obtain some more sufficient title for those who have passed the examinations for the Conjoint Diploma, remembering the importance attached to degrees to the detriment of holders of the said diplomas granted by this ancient corporation in conjunction with the Royal College of Physicians of London.

He claimed that the holders of the Conjoint diploma deserved a degree in medicine. Professor W. Osler and others had said definitely that the examinations of the Conjoint Board were quite as difficult as those of many degree-conferring bodies. It made a great deal of difference in practice. Statistics had shown that the average time taken to obtain the London Conjoint diploma was six and three-quarter years, while only five and a half years were required for Scottish graduates. The two Royal Colleges were in effect a university.

Mr. J. BRINDLEY JAMES seconded the motion and pointed out that the College of Physicians refused to allow its Licentiates to use the title of doctor.

Dr. J. B. FITZGERALD mentioned that he had passed the examination for the Membership in 1876; it was a decidedly stiff ordeal and fully equal to most other examinations, even in medicine, for the College of Surgeons at that time examined in medicine. He urged that the Members of the College who had passed in medicine should be admitted to a medical degree.

Dr. RICHARD PARAMORE was of opinion that the grievance was more imaginary than real. He did not think that the absence of a degree interfered with the power of making a good practice.

A MEMBER pointed out that there was a real grievance in the fact that at many hospitals the rules required a degree in the candidates for the staff appointments and would not be satisfied with the Conjoint diploma.

The motion was carried by a great majority.

Mr. H. ELLIOT-BLAKE then moved:—

That this meeting is of opinion that the Council of the Royal College of Surgeons, if possible in arrangement with the Royal College of Physicians, should adopt a hood and cap to complete the Conjoint or Fellows' and Members' academicals.

He pointed out that the Royal College of Preceptors and the Royal College of Music each gave a hood to its diplomates and therefore there had been a misapprehension in the decision of the Council not to grant a hood on the plea that "hoods do not appear to be in general use among Colleges of similar standing to the Royal College of Surgeons in England."

The PRESIDENT stated that the Council could only reply in the same terms as last year to a resolution which was to the same effect as a resolution of last year. The Council had come to a careful decision in the matter and had stated the grounds on which its decision had been based.

The motion was not seconded and so it was not put.

Dr. LAWRENCE then asked permission not to move his motion on the agenda expressing an entire want of confidence in the management of the College affairs and finances by the Council, this action being taken at the request of the Society of Members.

Mr. HILLS then asked if the Council would be willing that the Members should be represented on the Council by four Fellows in general practice.

The PRESIDENT replied that necessarily he could not reply for the Council but he pointed out that at the last election of members of Council a Fellow of the College in general practice was a candidate and received a large measure of support.

ROYAL SOCIETY OF MEDICINE.

DEBATE ON HEREDITY, WITH SPECIAL REFERENCE TO CANCER, TUBERCULOSIS, AND DISEASE OF THE NERVOUS SYSTEM.—(*Continued from p. 1546.*)

Professor KARL PEARSON said that on the present occasion he occupied a third position, which was scarcely recognised by the medical profession on the one hand, nor by the biologist on the other. He was a mathematician or statistician. Most of the cases which had been discussed, and illustrations which had been thrown on the screen required some aid from the mathematician if the results were to be interpreted. Still, the mathematician was liable to make blunders unless he acted with the medical man and the biologist. He sympathised very largely with what Dr. Mercier said about the need for obtaining statistics with regard to normals as well as to abnormals. He (Professor Pearson) had himself compiled in his own way records of 400 families but he did not think that inferences could be drawn until about a thousand cases had been collected. The majority of those were put together by medical men, not necessarily from simple inquiry of patients at hospitals but from knowing the families over a long time. It was very difficult to obtain accurate results from inquiries in a London hospital. His own opinion was that the population in London was decidedly inferior to that met with in the north of England and in Scotland. And the statistics of Dr. Rivers, which were based upon sympathetic acquaintance with the patients, were not subject to the criticism which Dr. Latham passed upon them. All would agree about Dr. Mercier's remarks concerning mutations. His own view was that there was no truth in Mendelism at all. At the last meeting he saw on the screen one or two pedigrees which were supposed to illustrate Mendelism. There was Viall's pedigree which was familiar to most of those present, and recently Dr. Viall's son had carried that down one or two generations further. Diabetes insipidus or polyuria was traced through a non-affected member. Such cases were rare but they very probably existed. Pedigrees of albinism were also shown. He was much interested in that, because he had been busy, in conjunction with Mr. Nettleship, in collecting pedigrees of albinism from all parts of the world. They had now 600 pedigrees covering 5000 albinos. Most people would say that albinism was a mutation, but the difficulty arose, How was it to be classified at all? No simple category of albinotic or non-albinotic would cover it. There was every grade of albinism in both man and animals. When a necropsy was made on a man who had passed all his life as an albino pigment was found in all directions in his body. Was he really an albino or not? The classification of such people into albinotic and non-albinotic could not be carried far. He could give other illustrations of things or conditions which were said to be present or to be absent. The difficulty was to know whether they were really present or absent. There were many grades of albinos which could not be distinguished sufficiently ophthalmoscopically. About 100 specimens of hair albinos had now been examined and there was diffuse pigment in nearly all of them. The same could

be said about split foot and non-split foot. Three pedigrees of albinism had been put on the board, compiled by Dr. Magnus, concerning albinism in Norway; and Dr. Magnus was a very careful observer and very catholic in his views, so he sent a copy to Professor Bateson and asked him if he conformed to his view, and a copy to himself (Professor Pearson) and asked him if it agreed with his view. In those 30 pedigrees the conditions required by Mendelism failed utterly. It was of no use showing one or two on the board; the whole number should be taken. He had cases in which an albinotic woman had married two husbands who were not related to her nor to each other. The offspring of both parents were albinos. According to Mendel, both those stocks ought to have albinism in a recessive form. The chances against that could be calculated because albinism occurred in Norway in about 1 in 20,000 of the population; in Scotland 1 in 24,000. What were the chances that an albino woman would marry two affected stocks with albinism not related to her and not related to each other? He had no less than four or five such cases. He had the case of a negress who was normal. She married first a Frenchman and had an albino child. She then married a negro and had an albino child. He did not say there was any proof against Mendelism but that at present there were not available the data to judge by. It was necessary to increase the material over and over again and to get good material. Facts were the important thing. He believed that the only service which had been done by Mendel and his followers was to show the importance of noticing segregation. That held true, and there was some segregation taking place in the offspring of the second generation. The inquiry had done great service in setting very many people experimenting and collecting but it was yet too early to generalise on the facts obtained.

Professor BATESON here pointed out that he had shown a pedigree as an example which did not conform to Mendel's rules.

Professor PEARSON said that he was very glad to hear that. With regard to Dr. Latham's paper, Dr. Latham seemed to suppose that a certain degree of immunity was acquired and that that immunity was inherited. He did not understand him to say that in stating that he was accepting the hypothesis of the inheritance of acquired characters. But if that was to be said it was time to make a strong statement that it differed from the whole of the present biological tendency. And if it was true he feared Mendelism of every form collapsed. With regard to the actual problem being discussed, that of inheritance of a constitution, he thought it conceivable that the weakness of the constitution could lie in one particular organ, and therefore when he came to touch the subject of tuberculosis he carefully inquired among men with considerable experience whether it was desirable to club together all forms of tubercle, and the opinion given to him was that it was desirable to keep pulmonary tuberculosis apart from other forms. If that were done, and one said the constitution was inherited, what would be the effect of that? By leaving out the other forms one weakened the intensity of inheritance. To argue that they had been left out only meant that there ought to have been a far higher degree of inheritance than was found. All Dr. Latham's criticisms applied to that: that if the statistics were bad they ought to increase the strength of the inheritance; there should be a spurious value. But every time the statistics were weakened one approached more nearly to the problem of picking up random men in the street and arguing that if they had both got the disease they must be correlated together as father and son. That would bring relationship to zero. A question arose in his own mind whether the points made by Dr. Mercier as to the reduction of the disease were not really due to survival of the fitter. The view would not be very acceptable in that gathering, because the medical man liked to feel that the reduction in the cases was due to his efforts. He (Professor Pearson) was not sure that it was not largely due to the prevalence of tuberculosis in the last few generations. Dr. Mercier said that if there were 50 per cent. when the record was completed of offspring of tuberculous parents, then tuberculosis ought to increase. Why? His own view was that if the population was suitable there would be the same proportion of tuberculous people in the next generation. 50 per cent. of the children of tall parents might be tall, but it did not follow that the whole population was becoming taller. While the fraternities of the tuberculous were very large, averaging 6 and running up to 12 and 15, the offspring of the tuberculous gave a much less number of children. In other words, however late one might be postponing the period at which tuberculosis produced death, the period at which the oncome of the disease occurred was still from 25 to 28 years. He admitted that he appeared to be very dogmatic, but a little dogmatism was a good thing, it stirred people up to think and to inquire, and what was much wanted at the present day was to get a wave of inquiry in the medical profession, that its members would spend time and care, not in asking questions of hospital patients whom they saw only occasionally but in following up cases carefully. The formation of pedigrees was not easy, every pedigree was almost a work of art, and under those conditions it possessed a permanent value. If only one medical man in ten would once in their life collect two pedigrees, then in the course of the next generation there would be all the material necessary to answer those questions.

Dr. J. EDWARD SQUIRE said in regard to heredity in relation to pulmonary tuberculosis that tuberculosis, being the result of a bacterial infection, was not in itself a hereditary disease; it was only the predisposition to suffer from the infection which could be considered in relation to heredity. Undoubtedly there was a susceptibility to tuberculous infection in human beings differing in degree from that of other animals. That racial susceptibility was no doubt passed on by heredity. The point which they had to consider was whether there was in addition a special degree of susceptibility or predisposition affecting certain individuals which was transmitted from tuberculous parents to their offspring. In many diseases common to mankind, such as measles, certain individuals and certain families tended to suffer more than others, not only in the susceptibility to infection, but also in the severity of the resulting illness. That applied to tuberculosis. Was that greater degree of susceptibility a specific inherited peculiarity and was it of sufficient potency to constitute an important etiological factor of the disease? The question was important from the point of view of preventive medicine. No one would be prepared, he took it, at the present time to deny that various causes outside heredity—such as environment, previous illnesses, &c.—influenced the susceptibility of the individual to suffer from infection by the tubercle bacillus and the relative influence of such conditions required to be determined in each case before it was possible to assess the possible influence of heredity. For the investigation of heredity in human beings they were of necessity restricted to statistics based on the examination of pedigrees. When one person in every ten was or had been affected with a given condition—and tuberculosis was at least as common as that in this country—it was hardly safe to infer a special inherited influence because they found instances of the condition in several generations of any family unless they could show the comparative rarity of the condition in the majority of families. Even when the facts could be accurately ascertained, which in regard to tuberculosis was extremely difficult, only a trained statistician could manipulate them with advantage. Some years ago he published[1] some figures in connexion with heredity in consumption which he would summarise briefly. His statistics—if they might be dignified by that term—possessed all the fallacies which were inherent to investigations of that nature, but such as they were they served a useful purpose. When he published them the belief that consumption was essentially an inherited disease was widely prevalent. As evidence which tended to show that heredity was not all-powerful and that environment was a potent etiological factor they had, he believed, a certain value. Briefly he showed that in 1000 families, comprising 6457 children, whilst 33·16 per cent. of the children of phthisical parents became tuberculous, 23·65 per cent. of the children of non-phthisical parents in a similar rank of life developed the disease—a difference of less than 10 per cent. to represent possible hereditary influence. When the greater risk of infection run by those children who lived with consumptive parents was considered it seemed that the hereditary influence could not be very great. It was true that when both parents were tuberculous the percentage of tuberculous individuals amongst

[1] Transactions of the Royal Medical and Chirurgical Society, 1894, and American Journal of the Medical Sciences, November, 1897.

their offspring was as much as 43·15, but the risk of infection in these cases was doubled. His present opinion until more conclusive evidence was brought forward was that which he arrived at 15 years ago—namely, that susceptibility to suffer from tuberculous infection was a racial characteristic of human beings and that there was not sufficient evidence to prove that any special specific predisposition to that disease was transmitted by heredity by some individuals more than by others.

The debate was adjourned to Nov. 26th.

SANITATION IN INDIA.

The Annual Report of the Sanitary Commissioner with the Government in India for 1906.

THE annual report of the Sanitary Commissioner with the Government in India for the year 1906 was issued a few weeks ago. It would seem that these annual reports which are so full of interesting details concerning the state of the sanitation as exhibited in our great dependency regularly appear some two years after the year with which they deal has passed. This is probably accounted for by the large bulk of work that has to be collected from many provinces and embodied in a comprehensive survey. An immense amount of information is contained in these reports, for they deal with the health of both the European and native armies of India, with the jails of India, the vital statistics of the general population, the history of the chief diseases of the population, and with the general history of vaccination, as well as with the sanitary works that have been, or are being, undertaken, and conclude with valuable general remarks on special subjects. In the report under review these last embrace the Red Sea pilgrim traffic, the work of the research laboratories in India, and special inquiries into diseases such as enteric fever, dysentery, malaria, blackwater fever, and kala-azar. Investigations regarding piroplasma, rats, and biting flies are described also. This short summary is sufficient indication of the range of the report; without describing it further we may notice briefly some of the special work which has been performed.

Enteric fever is receiving now very careful attention, and considering the ravages which this disease has caused amongst our troops, we are glad to note that at length some fruitful results seem likely to reward the labours of the medical officers concerned. Notable advances in our knowledge of important problems connected with the disease have been recorded. These advances have resulted in great part from the new impulse which has been given to its investigation by the work of Koch and his followers, and are of so striking a character as to give good reason to hope that before very long most of these vexed problems will be solved finally. The lead given by the Germans has been followed enthusiastically in India and the committee of investigation at the Central Research Institute at Kasauli has obtained results of engrossing interest and far-reaching importance. Captain Greig, I.M.S., the officer who has been temporarily in charge of the bacteriological inquiry, has written a most interesting interim report. Thus the subject of paratyphoid fever has been fully entered into and its special signs portrayed. The importance of the rôle of convalescents and the so-called "bacillus carriers" has claimed attention, and the effect of contaminated drinking water has been found to be the cause of infection in a decreased degree. The Government of India has arranged as the result of a representation from the Duars Planters' Association that an inquiry into the prevalance of blackwater fever in these districts should be instituted. A careful preliminary survey of the conditions existing in the tea gardens was made by Dr. C. A. Bentley and as a result of his important observations material available for the study of the disease has been gathered sufficient to render a successful investigation possible.

An important fact respecting kala-azar has been determined by Captain W. S. Patton, I.M.S., at the King Institute at Guindy. He has found that the parasite undergoes development in the body of a species of bed-bug. Much work has also been undertaken in order to determine the correct zoological position of the Leishman-Donovan parasite, which seems to show that it is not a piroplasma.

A comprehensive study of the identification of the rats of India has been begun and an inquiry is being prosecuted respecting the biting flies of India, and one of the most important researches in the department has been to determine whether the tsetse fly occurs in India, in view of the possibility that cases of sleeping sickness may be imported there. No evidence of the presence of this fly has so far been obtained.

A considerable number of admissions for Malta fever are noted, especially in the Punjab, in a full account of the disease by Major C. N. C. Wimberley, I.M.S., who has shown that 100 days or more were a common duration of the fever, relapses being frequent, whilst pain and effusion into joints were present in most cases. The blood agglutinated the micrococcus Melitensis in dilutions as high as 1 in 1280 and in one case as high as 1 in 5120. Such are a few of the facts that have been found out since the last report, which fully bears out our opinion of the large amount of sanitary work that has still to be done in India.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7571 births and 4851 deaths were registered during the week ending Nov. 21st. The annual rate of mortality in these towns, which had been equal to 15·0 and 15·9 per 1000 in the two preceding weeks, declined again to 15·6 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these towns averaged 14·5 per 1000, and in London the mean rate in the same period did not exceed 13·8. The lowest annual death-rates in these towns last week were 6·1 in Handsworth, 7·3 in Hornsey, 8·3 in Reading, and 8·8 in East Ham; the rates in the other towns ranged upwards, however, to 26·0 in Stockport, 26·8 in Wigan, 27·0 in Rotherham, 31·4 in Stockton-on-Tees, and 33·8 in Middlesbrough. In London the death-rate during the week did not exceed 14·8 per 1000. The 4851 deaths from all causes in the 76 towns showed a decline of 113 from the number returned in the previous week, and included 422 which were referred to the principal epidemic diseases, against 567, 470, and 434 in the three preceding weeks; of these 422 deaths, 139 resulted from diarrhœa, 126 from measles, 56 from diphtheria, 40 from "fever" (principally enteric), 35 from whooping-cough, and 26 from scarlet fever, but not one from small-pox. The deaths referred to these epidemic diseases during the week were equal to an annual rate of 1·4 per 1000, corresponding with the rate that prevailed in the previous week; in London the death-rate from these diseases last week did not exceed 1·1 per 1000. No death from any of these epidemic diseases was registered last week in Birkenhead, Leyton, Southampton, Hornsey, York, or in six other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to 3·9 in St. Helens and in Huddersfield, 9·0 in Rotherham, and 9·6 in Middlesbrough. The 139 deaths attributed during the week to diarrhœa in the 76 towns showed a further decline of 13 from the numbers in recent weeks, and were fewer than in any week since the middle of July; the highest annual death-rates from this cause during the week were 1·6 in Walsall, 1·9 in Blackburn, and 2·9 in Grimsby. The fatal cases of measles, which had steadily increased in the eight preceding weeks from 31 to 104, further rose to 126 during the week under notice; they caused death-rates equal to 3·0 in Leicester, 3·3 in Huddersfield, 5·5 in Middlesbrough, and 7·4 in Rotherham. The 56 deaths from diphtheria showed a further decline of four from the high numbers returned in the two preceding weeks; this disease, however, caused death-rates exceeding 1 per 1000 in Wolverhampton, Middlesbrough, St. Helens, and Devonport. The deaths referred to "fever" during the week were 40, against 41 and 45 in the two preceding weeks; two deaths from "fever" were recorded in St. Helens, equal to an annual rate of 1·1 per 1000. The 35 deaths from whooping-cough showed a further slight increase upon recent weekly numbers, whereas the 26 fatal cases of scarlet fever were fewer by 13 than those returned in the previous week; 13 deaths from scarlet fever were

returned during the week in London and its suburban districts and five in Liverpool. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily increased in the ten preceding weeks from 2855 to 3861, had declined to 3809 on Saturday, Nov. 21st; the new cases of this disease admitted to these hospitals during the week under notice was 421, against 507, 512, and 500 in the three preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had steadily increased in the five preceding weeks from 159 to 310, further rose last week to 334, but were 52 below the corrected average number in the corresponding week of the five years 1903–07. The causes of 36, or 0·7 per cent., of the deaths registered during last week in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death during the week were again duly certified in London, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 52 other smaller towns; the 36 uncertified causes of death in the 76 towns included, however, 12 in Liverpool, five in Birmingham, three in Sheffield, and two in Manchester.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 15·4 and 16·9 per 1000 in the two preceding weeks, further rose to 17·3 in the week ending Nov. 21st. During the first eight weeks of the current quarter the annual death-rate in these eight towns averaged 14·8 per 1000, and exceeded by 0·3 the mean rate during the same period in the 76 English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 10·4 and 14·0 in Paisley and Edinburgh, to 21·0 in Dundee and 22·8 in Leith. The 610 deaths in the eight towns showed a further increase of 13 upon the numbers returned in the two previous weeks, and included 62 which were referred to the principal epidemic diseases, against 55 and 68 in the two preceding weeks; of these 62 deaths, 22 resulted from diarrhœa, 16 from whooping-cough, nine from diphtheria, eight from scarlet fever, five from "fever," and two from measles, but not one small-pox. These 62 deaths were equal to an annual rate of 1·8 per 1000, which exceeded by 0·4 the mean rate from the same diseases in the 76 English towns. The deaths attributed to diarrhœa in the eight Scotch towns, which had been 34, 29, and 24 in the three preceding weeks, further declined to 22 in the week under notice, and included 10 in Glasgow, four in Aberdeen, and two each in Edinburgh, Dundee, Leith, and Greenock. The 16 fatal cases of whooping-cough were within one of the number in the previous week; 12 occurred in Glasgow, and two both in Edinburgh and in Aberdeen. The nine deaths from diphtheria, of which six were returned in Glasgow, showed a slight decline from the numbers in recent weeks. The eight fatal cases of scarlet fever corresponded with the number in the previous week, including five in Glasgow and one each in Edinburgh, Dundee, and Leith. The five deaths referred to "fever," of which four were certified as enteric, were all recorded in Glasgow. Two deaths from measles were returned, including one in Glasgow and one in Aberdeen, no death from this disease having been recorded during the three preceding weeks. The deaths referred to diseases of the respiratory organs in the eight towns, which had increased from 56 to 126 in the four preceding weeks, further rose to 136 in the week under notice, and exceeded by 29 the number returned in these towns in the corresponding week of last year. The causes of 13, or 2·1 per cent., of the deaths registered during the week in the eight towns were not certified; in the 76 English towns during the same week the proportion of uncertified causes of death did not exceed 0·7 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 20·4, 23·8, and 19·3 per 1000 in the three preceding weeks, rose to 24·2 in the week ending Nov. 21st. During the first eight weeks of the current quarter the death-rate in the city averaged 19·4 per 1000, whereas the mean rate during the same period did not exceed 14·5 in London and 13·3 in Edinburgh. The 183 deaths of Dublin residents during the week under notice exceeded the number returned in any week since the middle of May last, and included 21 which were referred to the principal epidemic diseases, against 15 and eight in the two preceding weeks. These 21 deaths were equal to an annual rate of 2·8 per 1000; the rate from these diseases in the same week did not exceed 1·1 in London and 0·7 in Edinburgh. Of the 21 deaths from these epidemic diseases in Dublin last week, eight resulted from measles, four from "fever," four from whooping-cough, four from diarrhœa, and one from diphtheria, but not one either from scarlet fever or small-pox. The eight fatal cases of measles showed a marked increase upon the numbers returned in recent weeks; and those referred to "fever" and whooping-cough also showed some increase. The 183 deaths from all causes during the week included 32 of infants under one year of age and 46 of persons aged upwards of 60 years; both these numbers showed an increase upon those returned in the previous week. Four inquest cases and two deaths from violence were registered, and 59, or 32·3 per cent., of the deaths occurred in public institutions. The causes of three, or 1·6 per cent., of the deaths in Dublin last week were not certified; the proportion of uncertified causes of death in Edinburgh last week was equal to 3·3 per cent., while in London the cause of each of the 1357 deaths was duly certified.

VITAL STATISTICS OF LONDON DURING OCTOBER, 1908.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 9·2 per 1000 of the population, estimated at 4,795,757 persons in the middle of the year; in the three preceding months the rates were 6·5, 6·3, and 8·6 per 1000 respectively. The lowest rates last month were recorded in Hammersmith, Chelsea, Hampstead, Holborn, and the City of London; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Deptford. Scarlet fever was rather less prevalent than in other recent months; among the several metropolitan boroughs the greatest proportional prevalence of this disease occurred in Paddington, Shoreditch, Bethnal Green, Stepney, Poplar, and Deptford. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 2693, 2807, and 3431 at the end of the three preceding months, had further risen to 3776 at the end of October; the weekly admissions averaged 493, against 372, 365, and 506 in the three preceding months. The prevalence of diphtheria showed a marked increase last month; this disease was proportionally most prevalent in Fulham, Chelsea, Bethnal Green, Bermondsey, Battersea, Greenwich, and Lewisham. The Metropolitan Asylums Hospitals contained 1118 diphtheria patients at the end of last month, against 738, 843, and 953 at the end of the three preceding months; the weekly admissions averaged 158, against 100, 110, and 128 in the three preceding months. Enteric fever also was much more prevalent than in other recent months; the greatest proportional prevalence of this disease was recorded in the City of London, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. There were 145 enteric fever patients under treatment at the end of last month, against 54, 69, and 95 at the end of the three preceding months; the weekly admissions averaged 24, against nine, 12, and 18 in the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, Shoreditch, Bethnal Green, Stepney, Bermondsey, Deptford, and Greenwich. The 25 cases of puerperal fever notified during the month included four belonging to Bermondsey, three to Hackney, three to Poplar, two to Paddington, and two to Kensington. Of the eight cases notified as cerebro-spinal meningitis two belonged to Islington, and one each to Westminster, St. Marylebone, Shoreditch, Stepney, Lambeth, and Wandsworth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in institutions having been distributed among the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1908.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1908.	NOTIFIED CASES OF INFECTIOUS DISEASE.										DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,795,757	—	2605	902	—	221	4	25	480	8	4245	9·2	—	63	46	53	34	—	37	—	353	586	1·3	5659	12·3	124
West Districts.																										
Paddington	150,923	—	116	29	—	2	—	2	16	—	165	11·4	—	1	2	1	1	—	—	—	8	13	0·9	142	9·8	156
Kensington	182,752	—	65	20	—	5	—	2	15	—	107	6·1	—	—	3	1	2	—	—	—	11	17	1·0	211	12·0	156
Hammersmith	124,012	—	35	16	—	3	—	—	8	—	62	5·2	—	1	2	—	1	—	—	—	11	15	1·3	151	12·7	151
Fulham	171,562	—	67	46	—	5	—	1	10	—	129	7·8	—	2	2	6	1	—	—	—	14	25	1·5	181	11·0	147
Chelsea	75,049	—	8	18	—	2	—	1	3	—	32	4·4	—	—	—	2	3	—	—	—	2	7	1·0	85	11·8	108
City of Westminster	170,545	—	98	23	—	4	—	1	12	1	139	8·5	—	1	—	1	—	—	1	—	2	5	0·3	154	9·4	91
North Districts.																										
St. Marylebone	126,867	—	50	10	—	2	—	—	17	1	80	6·6	—	5	1	1	1	—	—	—	7	15	1·2	149	12·2	87
Hampstead	92,654	—	39	6	—	3	1	1	3	—	53	6·0	—	—	—	—	—	—	2	—	3	5	0·6	78	8·8	65
St. Pancras	237,075	—	98	34	—	6	—	—	17	—	155	6·8	—	—	—	2	1	—	1	—	13	17	0·7	277	12·2	104
Islington	349,091	—	176	90	—	15	—	1	16	2	300	9·0	—	3	2	9	3	—	4	—	13	34	1·0	403	12·0	122
Stoke Newington	54,015	—	24	5	—	3	—	—	—	—	32	6·2	—	—	1	—	1	—	2	—	4	8	1·5	64	12·4	87
Hackney	235,253	—	135	43	—	12	—	3	26	—	219	9·7	—	1	1	4	2	—	—	—	19	27	1·2	272	12·1	126
Central Districts.																										
Holborn	54,466	—	16	2	—	3	—	1	3	—	25	4·8	—	—	—	—	1	—	—	—	2	3	0·6	62	11·9	98
Finsbury	96,007	—	62	31	—	10	—	—	11	—	114	12·4	—	3	1	2	2	—	3	—	15	26	2·8	173	18·8	141
City of London	19,252	—	5	1	—	3	—	—	—	—	9	4·9	—	—	—	—	—	—	—	—	—	1	—	21	11·4	—
East Districts.																										
Shoreditch	115,227	—	75	24	—	17	—	—	15	1	132	11·9	—	—	—	2	4	—	3	—	14	23	2·1	179	16·2	184
Bethnal Green	131,066	—	111	33	—	24	—	1	26	—	196	15·5	—	11	3	3	1	—	1	—	14	33	2·6	199	15·8	138
Stepney	310,706	—	268	57	—	21	—	—	50	1	397	13·3	—	14	6	3	1	—	1	—	38	63	2·1	470	15·8	143
Poplar	171,516	—	182	26	—	17	—	3	16	—	244	14·8	—	—	7	1	1	—	2	—	18	29	1·8	215	13·1	127
South Districts.																										
Southwark	210,442	—	93	37	—	6	—	1	26	—	163	8·1	—	2	1	3	1	—	1	—	22	30	1·5	298	14·8	146
Bermondsey	127,910	—	59	38	—	14	—	4	26	—	141	11·5	—	11	2	—	1	—	5	—	14	33	2·7	240	19·6	152
Lambeth	321,344	—	147	36	—	12	—	—	30	1	226	7·3	—	2	4	3	—	—	1	—	16	26	0·8	334	10·8	83
Battersea	183,873	—	135	48	—	—	—	1	14	—	198	11·2	—	1	—	1	—	—	1	—	13	16	0·9	200	11·3	126
Wandsworth	289,506	—	165	52	—	4	—	1	18	1	241	8·7	—	—	3	2	2	—	2	—	13	22	0·8	286	10·3	96
Camberwell	280,022	—	91	51	—	10	—	—	27	—	179	6·7	—	1	1	2	1	—	3	—	12	20	0·7	285	10·6	114
Deptford	117,539	—	97	19	—	6	—	—	28	—	150	13·3	—	—	—	1	2	—	—	—	15	18	1·6	139	12·3	149
Greenwich	109,110	—	60	30	—	4	—	—	17	—	111	10·6	—	2	1	1	—	—	2	—	10	16	1·5	132	12·6	158
Lewisham	156,627	—	73	46	—	5	3	1	16	—	144	9·6	—	2	3	2	—	—	2	—	21	30	2·0	138	9·2	109
Woolwich...	131,346	—	54	31	—	1	—	—	13	—	99	7·9	—	—	—	—	—	1	—	—	9	10	0·8	122	9·7	90
Port of London	—	—	1	—	—	2	—	—	1	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup

several boroughs in which the deceased persons had previously resided. During the five weeks ending Oct. 31st the deaths of 5659 persons belonging to London were registered, equal to an annual rate of 12·3 per 1000; in the three preceding months the rates had been 10·3, 12·9, and 12·8 per 1000. The rates of mortality in the several boroughs ranged last month from 8·8 in Hampstead, 9·2 in Lewisham, 9·4 in the City of Westminster, 9·6 in Woolwich, 9·8 in Paddington, and 10·3 in Wandsworth, to 14·8 in Southwark, 15·8 in Bethnal Green and in Stepney, 16·2 in Shoreditch, 18·8 in Finsbury, and 19·6 in Bermondsey. The 5659 deaths from all causes included 586 which were referred to the principal infectious diseases; of these, 63 resulted from measles, 46 from scarlet fever, 53 from diphtheria, 34 from whooping-cough, 37 from enteric fever, and 353 from diarrhœa, but not any from small-pox, from typhus fever, or from ill-defined pyrexia. No death from any of these diseases was recorded last month in the City of London; among the metropolitan boroughs they caused the lowest death-rates in Westminster, Hampstead, St. Pancras, Holborn, and Camberwell; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Bermondsey, and Lewisham. The 63 fatal cases of measles showed a decline of 18 from the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Chelsea, St. Marylebone, Finsbury, Bethnal Green, Stepney, and Bermondsey. The 46 deaths from scarlet fever were 20 fewer than the corrected average; the greatest proportional mortality from this disease was recorded in Kensington, Hammersmith, Bethnal Green, Stepney, Poplar, and Lewisham. The 53 fatal cases of diphtheria were 15 below the average for the corresponding period of the five preceding years; among the various metropolitan boroughs this disease was proportionally most fatal in Fulham, Chelsea, Islington, Finsbury, Hackney, Shoreditch, and Bethnal Green. The 34 deaths from whooping-cough were equal to only one-half of the corrected average number; the highest death-rates last month from this disease were recorded in Kensington, Chelsea, Finsbury, Shoreditch, and Deptford. The 37 fatal cases of enteric fever were 11 below the corrected average number; of these 37 deaths, five belonged to Bermondsey, four to Islington, and three each to Finsbury, Shoreditch, and Camberwell. The 353 deaths from diarrhœa were eight above the average number in the corresponding period of the five preceding years; the greatest proportional mortality from this disease occurred in Finsbury, Shoreditch, Bethnal Green, Stepney, Bermondsey, Deptford, and Lewisham. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was more than 10 per cent. below the average.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 124 per 1000. No death at this age occurred in the City of London; among the boroughs the lowest rates of infant mortality were recorded in Westminster, St. Marylebone, Hampstead, Stoke Newington, Lambeth, and Woolwich; and the highest rates in Paddington, Kensington, Hammersmith, Shoreditch, Bermondsey, and Greenwich.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned Staff-Surgeons have been promoted to the rank of Fleet-Surgeon in His Majesty's Fleet, viz.:—Percival Marshall May, Christopher Louis White Bunton, Frederick Davidson Lumley, Edward Thomas Meagher, Henry Edward Tomlinson, Arthur Sydney Gordon Bell (dated Nov. 15th, 1908).

The following appointments are notified:—Fleet-Surgeons: E. A. Shaw to the *Queen*, on recommissioning; P. Y. Jackson to the *Lord Nelson*, on recommissioning; and G. T. Broatch for R.N. Hospital, Yarmouth. Staff-Surgeons: S. H. Facey to the *Actæon*, temporarily; G. Gibson to the *Sapphire*; P. K. Nix to the *Cornwall*; and J. Mowab to the *Triumph*, on recommissioning. Surgeons: S. Bradbury to the *Queen*, on recommissioning; E. L. Atkinson lent to Haslar Hospital for special duties, temporarily; A. T. Rivers to the *Lord Nelson*, on recommissioning; H. Cooper to the *Vivid*, additional for Pembroke Dockyard; P. B. Egan to the *Pembroke*, additional, for disposal; H. G. T. Major to the *Spanker*, on recommissioning; P. M. Rivaz to the *Vivid*, additional, for disposal, and to the *Triumph*; and F. M. V. Smith to the *Vivid*. Fleet Paymaster: C. F. Petch to the *Triumph*, on recommissioning.

RESERVE OF OFFICERS.

The undermentioned officers, from the late Royal Army Medical Corps (Militia), having assented to be transferred, are appointed officers of the Reserve of Officers, with effect from Sept. 20th, 1908, retaining the rank and seniority which they held in the Militia:—Captains: Herbert E. Dalby, Samuel T. Beggs, Lieutenant Daniel V. M. Adams.

Militia.—The undermentioned officers, having assented to be transferred, are appointed officers of the Special Reserve of Officers from the dates stated, retaining the rank and seniority which they held while in the Militia:—From the late Royal Army Medical Corps (Militia) (dated Sept. 20th, 1908):—Majors: Harold E. Mortis and William K. Steele. Captains: Jonathan Clerke, John H. F. Graham, Ernest U. Bartholomew, Honorary Major William V. Sinclair, Stuart G. McAllum, James C. Furness, Samuel M. Sloan, and Frederick E. Bissell. Lieutenants: James C. McCarroll, Denis Murphy, Robert A. O'Donovan, Robert J. Stirling, and Wilson Ranson.

The undermentioned officers resign their commissions (dated Sept. 20th, 1908): Captain Hewett J. L. Bullen, Lieutenant Herbert H. B. Cunningham, and Lieutenant Patrick J. Carroll.

TERRITORIAL FORCE.

Yeomanry.

North Somerset: Surgeon-Lieutenant John Empson, from the North Somerset Imperial Yeomanry, to be Surgeon-Lieutenant, with precedence as in the Imperial Yeomanry (dated April 1st, 1908).

Honourable Artillery Company.

Infantry: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Walter Culver James, from the Honourable Artillery Company of London, to be Surgeon-Lieutenant-Colonel, with the honorary rank of Surgeon-Colonel, with precedence as in the Honourable Artillery Company of London (dated April 1st, 1908).

Royal Field Artillery.

2nd East Anglian Brigade: Surgeon-Captain George Alexander Troup, from the 1st Essex Royal Garrison Artillery (Volunteers), to be Surgeon-Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). 3rd East Anglian (Howitzer) Brigade: Surgeon-Lieutenant Richard Wilson Mullock, from the 1st Norfolk Royal Garrison Artillery (Volunteers), to be Surgeon-Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Bedfordshire: Surgeon-Captain Henry Skelding, from the Bedfordshire Imperial Yeomanry, to be Surgeon-Captain, with precedence as in the Imperial Yeomanry (dated April 1st, 1908). Essex: Surgeon-Lieutenant Charles Gordon Roberts, from the Essex Imperial Yeomanry, to be Surgeon-Lieutenant, with precedence as in the Imperial Yeomanry (dated April 1st, 1908).

Royal Garrison Artillery.

Essex and Suffolk: Surgeon-Captain Charles Forsyth, from the 1st Essex Royal Garrison Artillery (Volunteers), to be Surgeon-Captain, with precedence as in the Volunteer Force (dated April 1st, 1908).

Infantry.

5th Battalion, The Devonshire Regiment: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel William Henry Webb, from the 5th (The Hay Tor) Volunteer Battalion, to be Surgeon-Lieutenant-Colonel, with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Major Ernest Paul Alphonse Mariette, from the 2nd (Prince of Wales's) Volunteer Battalion, to be Surgeon-Major, with precedence as in the Volunteer Force (to be supernumerary) (dated April 1st, 1908). Surgeon-Lieutenant Walter Chapman, from the 5th (The Hay Tor) Volunteer Battalion, to be Surgeon-Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). The Hertfordshire Battalion, The Bedfordshire Regiment: Surgeon-Lieutenant John Alfred Kite, from the 1st (Hertfordshire) Volunteer

Battalion, to be Surgeon-Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). 5th Battalion, The Prince of Wales's Own (West Yorkshire Regiment): The undermentioned officers, from the 1st Volunteer Battalion, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Surgeon-Lieutenant-Colonel Frederick Shann, Surgeon-Major Alexander Reid Stoddart, and Surgeon-Captain Ernest Solly. 5th Battalion, The Prince of Wales's Volunteers (South Lancashire Regiment): Surgeon-Lieutenant Ralph R. Brunskill to be Surgeon-Captain (dated August 19th, 1908). 5th Battalion, The Welsh Regiment: Surgeon-Lieutenant Evan J. T. Jones to be Surgeon-Captain (dated April 1st, 1908). 4th Battalion, The King's Own (Yorkshire Light Infantry): The undermentioned officers, from the 1st Volunteer Battalion, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Surgeon-Lieutenant-Colonel Edwin Lee and Surgeon-Captain George Symers Mill. 5th Battalion, The King's Own (Yorkshire Light Infantry): Surgeon-Captain Vyner Graham, from the 2nd Volunteer Battalion, The York and Lancaster Regiment, to be Surgeon-Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). 4th (Hallamshire) Battalion, The York and Lancaster Regiment: The undermentioned officers, from the 1st Volunteer Battalion, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Surgeon-Captain Duncan Gray Newton, Surgeon-Captain Sidney Frederick Barber, Surgeon-Captain William Smith Kerr (to be supernumerary), and Surgeon-Lieutenant Christopher Addison (to be supernumerary). 5th Battalion, The York and Lancaster Regiment: The undermentioned officers, from the 2nd Volunteer Battalion, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Surgeon-Captain Alfred Robinson and Surgeon-Lieutenant Harold Forster Horne.

Royal Army Medical Corps.

Sir John Williams, Bart., K.C.V.O., is appointed to the Honorary Colonelcy of the Royal Army Medical Corps of the Welsh Territorial Division (dated Sept. 21st, 1908). John Edwin Eddison is appointed to the Honorary Colonelcy of the Royal Army Medical Corps of the West Riding Territorial Division (dated Oct. 1st, 1908).

For attachment to units other than medical units.—John Charles Reynolds Robinson, late Captain 1st Norfolk Royal Garrison Artillery (Volunteers), to be Captain (dated April 1st, 1908). James Malpas (late Captain, 3rd (Duke of Connaught's Own) Volunteer Battalion, The Hampshire Regiment), to be Captain (dated April 1st, 1908). Surgeon-Captain Oliver Eaton, from the 1st Devonshire Royal Garrison Artillery (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain John L. Loudon to be Major (dated June 9th, 1908). Captain James A. Wilson to be Major (dated June 19th, 1908). Captain James Cameron to be Major (dated Sept. 1st, 1908). Lieutenant Neish P. Watt to be Captain (dated June 12th, 1908). Andrew Robertson to be Lieutenant (dated June 9th, 1908). David James Graham to be Lieutenant (dated July 3rd, 1908). Captain Alexander E. Watson resigns his commission (dated June 25th, 1908). Lieutenant John L. Rankine resigns his commission (dated August 18th, 1908). Herbert Ernest Corbin to be Lieutenant (dated Sept. 24th, 1908). Robert William Mayston to be Lieutenant (dated Oct. 27th, 1908).

Notts and Derby Mounted Brigade Field Ambulance: Captain Lewis Walter Pockett, from the Royal Army Medical Corps, Territorial Force, to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Lieutenant Alexander Robert Tweedie, from the 3rd Kent Royal Garrison Artillery (Volunteers), to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Arthur Briggs Dunne to be Lieutenant (dated August 17th, 1908). Oswald Kentish Wright to be Lieutenant (dated August 17th, 1908). William Henry Rowell to be Lieutenant (dated Oct. 1st, 1908). Walter Harington Fisher, to be Lieutenant (dated Oct. 1st, 1908).

2nd South-Western Mounted Brigade Field Ambulance: Arthur Cary (late Major, 1st Devonshire and Somersetshire Royal Engineers (Volunteers)), to be Major (dated April 1st, 1908).

Yorkshire Mounted Brigade Field Ambulance: Captain George Herbert Leonard Hammerton, from the South Yorkshire Brigade Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908).

3rd East Lancashire Field Ambulance: Wilson Harold Percy Hey to be Lieutenant (dated August 24th, 1908).

3rd Lowland Field Ambulance: Henry John Dunbar to be Lieutenant (dated Oct. 22nd, 1908).

1st London General Hospital: Captain Herbert Murray Ramsay, Reserve of Officers, late Scots Guards, to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Lieutenant Henry Neville Burroughes from the 14th Middlesex (Inns of Court) Volunteer Rifle Corps, to be Captain (dated April 1st, 1908).

1st Southern General Hospital: George Jordan Lloyd (formerly Surgeon-Lieutenant, 1st Volunteer Battalion, The Royal Warwickshire Regiment), to be Lieutenant-Colonel (dated June 3rd, 1908); James Edward Hill Sawyer to be Major (dated June 3rd, 1908).

4th Southern General Hospital: Charles Edmund Russel Rendle (formerly Captain, 4th Volunteer Battalion, The Devonshire Regiment), to be Lieutenant-Colonel (dated Sept. 30th, 1908). Henry Woolmington Webber (formerly Captain, Devon Bearer Company, Royal Army Medical Corps (Volunteers)), to be Major (dated Sept. 30th, 1908).

Captain Leonard Wood, Royal Army Medical Corps, to be Adjutant of a School of Instruction (dated Oct. 30th, 1908); Captain Francis M. Parry, Royal Army Medical Corps, to be Adjutant of a School of Instruction, vice Captain Langford N. Lloyd, D.S.O., whose tenure of that appointment has expired (dated Nov. 1st, 1908); Captain Langford N. Lloyd, D.S.O., Royal Army Medical Corps, to be Adjutant of a School of Instruction, vice Captain Edgar T. Inkson, V.C., whose tenure of that appointment has expired (dated Nov. 1st, 1908).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Devonshire: Surgeon-Lieutenant Harold C. Adams resigns his commission (dated April 1st, 1908). 7th Lancashire: Surgeon-Lieutenant (Honorary Captain in the Army) Charles J. J. Harris resigns his commission (dated March 31st, 1908).

THE RESULTS OF SANITATION IN THE EFFICIENCY OF ARMIES IN PEACE AND WAR.

Under this title Surgeon-General Sir Alfred Keogh, K.C.B., Director-General of the Army Medical Service, delivered a lecture at a meeting of the Royal Sanitary Institute held on Nov. 18th under the presidency of Colonel J. Lane Notter, R.A.M.C. The lecturer pointed out that in times of peace measures of sanitation were limited only by their cost. In time of war sanitation must be subordinated to the leading principle of strategy—to get the greatest number of men to the decisive point in the shortest time. As showing what could be done by carefully thought-out sanitary schemes he contrasted the failure of the Ashantee campaign of 1854 with the success of that in 1873. As evidence of what careful sanitation did in the eighteenth century, he described the work of the 7th Dragoon Guards (Black Horse) in the Flanders campaign, when only six men died from illness in five years.

The King has been graciously pleased to accept from Staff-Surgeon Henry Hunt, R.N., a copy of his book, entitled "Naval Sketches."

LITERARY INTELLIGENCE.—Three books connected with the tropics are shortly to be published by Messrs. J. and A. Churchill: "Report on the Prevention of Malaria in Mauritius," by Professor Ronald Ross, C.B., F.R.S. (the book includes many illustrations and charts and is issued by the authority of the Crown Agents for the Colonies); a new volume of studies from the Institute of Medical Research, issued by the authority of the Government of the Federated Malay States; and "Lessons on Elementary Hygiene, for Especial Use in Tropical Climates," by Dr. W. T. Prout, C.M.G.—Simultaneously with the publication of the cheap and revised edition, "Alcohol and the Human Body," by Sir Victor Horsley and Dr. Mary Sturge, the issue of a complete set of slides illustrating the same is announced by the National Temperance League, 34, Paternoster-row, London, E.C., which has obtained the right of reproduction from the original figures, tables, and plates.

Correspondence.

"Audi alteram partem."

VEGETARIANISM AND PHYSIQUE.

To the Editor of THE LANCET.

SIR,—I have read with great interest your annotation on the above subject.[1] I am in complete agreement with its main contention that "vegetarianism is a fallacy," and I would add, often a dangerous fallacy. In upwards of a quarter of a century of dietetic experience I have seen many whose well-intentioned but ignorant endeavours after the impossible have ended in their own destruction. I also agree that the amount of proteid recommended by Chittenden will not be found sufficient if watched over a longer period and with wider experience. I believe, however, that part of the difficulty of the natives of Bengal is poverty; they could take more proteid and would be stronger if they could get it. With the natives of Western Europe the difficulty is of another kind. They have become accustomed to the use of proteid in very concentrated forms—e.g., meat, fish, game, eggs—and are now unable to take enough when it is presented in the more diffused forms.

There are several ways out of this difficulty, but the vegetarians, who in my experience have seriously injured themselves, have for one reason or another not made use of any of them. If they are to remain true vegetarians they practically must take nuts, yet, though numbers in various countries live to a large extent on nuts, those who have been 30 or 40 years on flesh foods have so modified their digestion and injured their digestive organs that nut digestion may be practically impossible. Healthy children and young adults, on the other hand, can digest most nuts, so that for them true vegetarianism is possible. The other way out of their difficulty is to add animal foods, such as milk or cheese (the most concentrated proteid food we have), to make up the necessary albumins. This is done in other parts to a much larger extent than in Western Europe, possibly because the meat-eating habit has here to some extent driven out other albuminous foods.

It is the purin-free dietists who have added these more concentrated foods in sufficient quantity who have furnished the remarkable records of strength and endurance discussed by Professor Irving Fisher,[2] Professor P. Fauvel,[3] and others, records which may be said to have established the practical superiority of a fleshless diet when sufficient proteid is taken. Vegetarianism has been a great thorn in my side in advocating, as I do, a physiological and purin-free diet (vegetarianism is neither of these), because those who have seen the unfortunate results of vegetarian ignorance have not kept in mind the important physiological points in regard to which I differ so completely from them; for "the mixture of those things by speech which by nature are divided is the mother of all error."

I am, Sir, yours faithfully,

Brook-street, W., Nov. 21st, 1908. ALEXANDER HAIG.

A SERUM TREATMENT OF CARCINOMA IN MICE.

To the Editor of THE LANCET.

SIR,—Dr. Blair Bell says in his letter, published in THE LANCET of Nov. 21st:—"Mainly my complaint was, then, that no reference at all was made by Mr. Walker to the work of others on similar lines ..... and I carefully mentioned in my remarks that there *was* a difference in technique in some of the work, but that there was no *essential* difference." At the meeting of the Liverpool Medical Institution on Oct. 22nd, in reply to Dr. Blair Bell's criticisms, I stated that though familiar with the work of Dr. Borrel, I was unaware of his having done anything similar to my experiments. I dealt chiefly with Dr. Borrel because Dr. Bell represented his work as being most like to my own. As Dr. Bell has thus on two occasions declined to accept my well-considered statement, I took the only step that, under the conditions chosen by him, would make an absolutely conclusive answer possible—I wrote to Dr. Borrel, inclosing a copy of my paper, and asking him whether he had ever done any experiments similar to those I described. Obviously I cannot write to everyone who has worked with mouse cancer. In Dr. Borrel's reply to me, dated from the Pasteur Institute, Nov. 12th, 1908, he says: "I have never treated mice by inoculating them with a serum obtained with the testicles of mice. ..... I tried to produce immunity in mice by injecting them with crushed testes; the results were published by Bridré, (they were) negative. But (I have done) nothing resembling the experiments you describe." I may point out that, as well as the experiments with testis serum, those with tumour serum were described in detail in the paper I sent to Dr. Borrel.

In the *résumé* of his remarks upon my paper, furnished by himself to the secretary of the institution, Dr. Bell emphasised the words "testis serum." He also quoted Dr. Borrel as having done experiments similar to the rest of my experiments. Dr. Bell also quoted Dr. Borrel and others as having produced immunisation in mice by injecting the cells of various tissues, "and hand-in-hand, of course, with this in producing curative effects on these animal growths." Besides the contradiction of this assertion, made by Dr. Borrel himself, I may say that the statement contained in my former letter that the sera that had been found to produce immunisation "possessed no curative effect whatever upon already existing tumours," was taken from a general *résumé* of all the work done upon this point, written by Dr. Borrel late in 1907.

I have nothing further to say than that there is no more foundation in fact for the other statements made by Dr. Bell than there is in the case of his statement that Dr. Borrel had worked with "testis serum." (The inverted commas are Dr. Bell's.) I inclose Dr. Borrel's letter of Nov. 12th in order that you may see that my statements are correct.

I am, Sir, yours faithfully,

CHARLES WALKER.

Cancer Research Laboratory, University of Liverpool, Nov. 23rd, 1908.

*** We have received Dr. Borrel's letter to Mr. Walker containing the sentences quoted.—ED. L.

EARLY RECOGNITION OF MALIGNANT DISEASE.

To the Editor of THE LANCET.

SIR,—A great deal has been written in recent years regarding the importance of thorough removal of malignant disease when at all possible. The adoption of this has led to greatly improved results and less frequent recurrence. Can our profession not do a little more in order to encourage patients to consult their medical advisers at an earlier date than they do? It is a delicate matter to speak of such things to patients, but some general information might be given so that instead of women consulting their medical men when a cancer of the breast is far advanced and giving pain they would do so whenever they noticed anything abnormal. The cancer would be operated on when it was entirely local and the results would be very much better. Until the cause of cancer is discovered I am satisfied that some decided effort must be made in the direction of earlier recognition. A great deal is being done with regard to tuberculosis and a large amount of instruction has been given to the public on the subject. Similar efforts ought to be made in connexion with malignant disease.

I am, Sir, yours faithfully,

Glasgow, Nov. 21st, 1908. J. CRAWFORD RENTON.

THE CAUSE AND PREVENTION OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—Will you kindly extend to me the courtesy of your columns so that I may draw attention to the fact that Mr. F. Coleman's criticism is not only justified but that it has been anticipated, inasmuch as a reviewer in the *Dental Surgeon* drew attention to the point he raises in his letter in THE LANCET of Nov. 21st so long ago as 1905. The notice in question, which was otherwise entirely favourable,

[1] THE LANCET, Nov. 21st, 1908, p. 1537.
[2] Yale Medical Journal, March, 1907.
[3] Monographies Cliniques, No. 49, Paris, 1907, p. 42.

dealt with Dr. J. S. Wallace's "The Rôle of Modern Dietetics in the Causation of Disease" and from it (p. 458, *D.S.*, June 3rd, 1905) is taken the following passage: "Dr. Wallace has, we must point out, fallen into one error. He seems to think that the value of the use of hard and resistant food and general exercise of the jaw muscles as prophylactics against dental caries is a new discovery. We do not agree with him, and for this reason. 'Coleman's Manual of Dental Surgery and Pathology,' published as far back as 1881, contains on pp. 103, 104 an exhaustive argument on this very point. It is thereon pointed out what changes, both in character and preparation, the food of man has undergone during the last few centuries. The differences in his bread, meat, cooking, and manner of devouring his food are fully pointed out, special stress being laid upon the fact that since the introduction of the knife and fork the incisors and cuspidati by which in former ages the meat was torn from the bone have had their office converted into almost a sinecure."

In anticipation of your courtesy,

I am, with thanks,

THE EDITOR OF THE "DENTAL SURGEON."

Nov. 23rd, 1908.

THE ELECTROLYTIC ADMINISTRATION OF DRUGS.

To the Editor of THE LANCET.

SIR,—I would like to point out that cataphoric medication is not only not new to medicine but that it has been used also in dental surgery for many years (personally for 21 years). 11 years ago I wrote[1] describing the *modus operandi* for dissipating periodontitis, alveolar abscess, for obtunding sensitive dentine, and for bleaching discoloured teeth by cataphoresis. In another journal[2] I described about 30 cases where I had *inter alia* so obtunded the dentine that it could be drilled for the purpose of "filling" without the slightest pain or else anæsthetised the pulp that it could be extracted without the patient suffering any discomfort. I was therefore somewhat amused when the "Diurnal Reflector" heralded forth cataphoresis as another of its great medical discoveries, especially as the process is probably older than most of us living.

I am, Sir, yours faithfully,

H. FIELDEN BRIGGS, M.D. Brux., L.A.H. Dub.,
L.D.S. Glasg., D.D.S. Univ. Mich.

Eastbourne, Nov. 20th, 1908.

EPSOM COLLEGE: LATE ARCHDEACON THORNTON MEMORIAL FUND.

To the Editor of THE LANCET.

SIR,—May I be permitted through your columns to thank the very numerous Old Epsomians of the late headmaster's time (1855 to 1870), so large a proportion of whom are in the medical profession, for their generous donations to this fund, and also to inform them that it has been decided to place a very beautiful stained-glass window in the College chapel as the most fitting memorial to so esteemed a man. The window will be unveiled next Founders' Day and all subscribers will in due course receive notice of, and an invitation to, the ceremonial.

I am, Sir, yours faithfully,

PERCIVAL TURNER,
Honorary Secretary.

London, W.C., Nov. 24th, 1908.

UNUSUAL FOREIGN BODY IN THE EAR.

To the Editor of THE LANCET.

SIR,—The following interesting case came to my consulting-room this week. There is nothing particular about it clinically but the circumstances are certainly very unusual. The patient, a prominent volunteer, came to me complaining of deafness. His account of his case was as follows. He had just purchased some artificial ear drums, and on inserting one he became very deaf indeed; on withdrawing the instrument the deafness remained the same. He was the victim of suppurating ears and as a consequence somewhat hard of hearing and hence the attempt to use the artificial drum. This great increase of deafness after using the artificial drum brought him to me. On examining his ear I found deep in the canal a pultaceous mass of pus and débris and a black-looking body. On removing this with the forceps it proved to be a large earwig. The patient then told me that last August, being at camp, during one night he was awakened by fearful humming and buzzing in the ear. Energetically with his little finger he endeavoured to stop it and finally succeeded; he felt sure that the insect had dropped out, and thought no more about it. It seems strange that this large insect could remain in an ear, and that a suppurating one, for three months without causing more disturbance. How long it would have remained without notice had the patient not attempted to use the artificial drum one can only speculate. It is somewhat singular that whilst in the public mind this insect is so closely associated with the ear one should so seldom find any actual cases.

I am, Sir, yours faithfully,

JOHN FOSTER, F.R.C.S. Edin.,
Ophthalmic and Aural Surgeon, Cameron and Hartlepools Hospitals.

West Hartlepool, Nov. 19th, 1908.

[1] The Medical Annual, 1897, p. 187 et seq.
[2] The Dental Record, April, 1899.

PURE SODA-WATER.

To the Editor of THE LANCET.

SIR,—With reference to your extract in THE LANCET of Nov. 14th from the report of Dr. W. Collingridge, medical officer of health of the City of London, concerning impurities in soda-water, I should be glad to point out in your columns, with your permission, that the fault is not so much that of the soda-water manufacturers themselves as that of the public who place, or allow to be placed, the empty bottles in any convenient corner, regardless of the fact that these empty bottles will afterwards be collected, sent back to the mineral water manufacturers, and by them refilled, after washing in a manner which is not always effective. The microbes discovered upon analysis by Dr. E. E. Klein, bacteriologist to the City council—viz.: (*a*) "cocci"; (*b*) "sporing bacilli"; and (*c*) "small Gram-positive non-mobile bacilli, which in shape resembled diphtheroid microbes"—prove, although they gave no Neisser staining or caused any change in a guinea-pig's subcutaneous tissue when injected in large doses, that some of the empty bottles collected must have been deposited, somewhere and for some time, amidst garbage such as anyone with the most elementary knowledge of hygienic principles would seriously avoid. I would like to add that personally I prefer to purchase from a chemist liquid carbonic acid gas in small steel bulbs and then to aerate by this means boiled water in a special syphon provided for the purpose which I also obtained from my chemist. As the syphon is my property, remains in my home, and can be cleaned as often as considered necessary, I feel secure from the ravages of diphtheria, at least from this source.

I am, Sir, yours faithfully,

CAUTIOUS.

Nov. 18th, 1908.

DEATH CERTIFICATION AND MEDICAL SECRECY.

To the Editor of THE LANCET.

SIR,—I understand that the Brussels Medical Practitioners' College having pointed out to the communal council of that city that the form of death certificate supplied for the cause of death to be filled in by the medical attendant having to be handed open to the family of the deceased obliges the medical man to violate his obligation of professional secrecy, a promise has been given by the director of the sanitary service of the city that a new form for a "confidential medical certificate" shall be supplied. This will be handed, sealed, to the family, and after having been utilised for registration and statistical purposes (for which the name of the deceased is not required) it will be burnt. Thus there will be no permanent record of the cause of death. Surely this, though a most desirable change from the open certificate, which is necessarily sometimes so partial a statement of truth that it is practically false, is carrying medical secrecy to a dangerous length. There are many criminal trials where the certificate of the cause of death plays a very important part and it would surely be as easy to devise a system by

which the certificate could in case of necessity be produced without there being any general violation of secrecy as to prove how a person has voted at an election, which I believe can always be done in this country though the voting is by ballot. I am, Sir, yours faithfully,

G. P.

QUESTIONS IN EXAMINATIONS.

To the Editor of THE LANCET.

SIR,—In the recent examination in midwifery at the University of London for the degrees of M.B. and B.S. the second question was, "What is meant by the term 'middle pain'? Discuss the various theories as to its causation." The term "middle pain" is not employed in the vast majority of the text-books on gynæcology. It is not given in the large 24-volume encyclopædia medica, and therefore it is evidently not an expression in common use. I think I am correct in saying that seven-eighths of the candidates had never heard it before. It is obvious that examiners should exercise more care in setting questions; they should avoid any peculiar and local terms which are not included in the ordinary text-books. If questions such as these be set it must be entirely a matter of chance whether any individual candidate can answer. The University of London has often been blamed for setting foolish questions, and certainly it appears to me that more supervision should be exercised as to the questions set. I am, Sir, yours faithfully,

Nov. 24th, 1908. M.D., F.R.C.S.

*** It should certainly not have been assumed by any examiner or group of examiners that the students were familiar with the term. The question was to our mind an unjustifiable one. We deal with some aspects of the matter in a leading article this week.—ED. L.

THE CHOLERA EPIDEMIC IN RUSSIA AND PERSIA.

(BY THE BRITISH DELEGATE ON THE CONSTANTINOPLE BOARD OF HEALTH.)

DURING the last two months, as all the world knows, cholera has spread very widely throughout Russia. Your columns have already contained some account, from other sources, of the course of the outbreak; but the following summary of the statistics of the epidemic (as officially communicated to the Constantinople Board of Health) may be useful. I may note that the early records of the outbreak were given at length in my letter which appeared in THE LANCET of Sept. 5th (p. 765); but it would be impossible, if for reasons of space alone, to continue the record with the same degree of detail. It will be recalled that the disease was first recognised in Astrakhan on July 8th (21st). The subsequent returns were as follows:—

		Cases.	Deaths.
From July 8th (21st)	to July 19th (Aug. 1st)	98	47
,, ,, 20th (Aug. 2nd)	,, ,, 26th (,, 8th)	262	125
,, ,, 25th (,, 7th)	,, Aug. 1st (14th)	538	270
,, Aug. 1st (14th)	,, ,, 8th (21st)	1145	517
,, ,, 8th (21st)	,, ,, 15th (28th)	1199	573
,, ,, 16th (29th)	,, ,, 23rd (Sept. 5th)	1241	568
,, ,, 23rd (Sept. 5th)	,, ,, 30th (,, 12th)	2296	1026
,, ,, 30th (,, 12th)	,, Sept. 4th (17th)	3392	1377
,, Sept. 5th (18th)	,, ,, 12th (25th)	4393	2034
,, ,, 13th (26th)	,, ,, 20th (Oct. 3rd)	3251	1571
,, ,, 20th (Oct. 3rd)	,, ,, 27th (,, 10th)	2210	1082
,, ,, 28th (,, 11th)	,, Oct. 4th (17th)	1571	819
,, Oct. 5th (18th)	,, ,, 12th (25th)	1048	552

The above dates and figures are quoted from the official returns. It will be noted that the periods are not always exactly of a week's duration and that in one instance (the third in the table) the dates overlap. Nevertheless, the above statistics may be looked upon as approximately correct; they furnish a total of 22,644 cases and 10,561 deaths since the beginning of the epidemic down to Oct. 25th (New Style). These cases and deaths have been distributed over the following governments or provinces: In the valley of the Volga, the governments of Astrakhan, Saratof, Samara, Simbirsk, Kazan, Nijni Novgorod, Kostroma, Yaroslavl, and Tver; in the south the Don Cossack Territory, the governments of Ekaterinoslav, Kherson, the Taurida, Kharkof, Poltava, and Kief; in the centre, the governments of Voronezh, Tambof, Riazan, Tula, Orel, Vladimir, Smolensk, Moscow, Penza, Tchernigof, Kaluga, Kursk, and Minsk; in the north-east, in the governments of Viatka, Perm, Ufa, and Orenburg; in the northerly governments of Vologda, Olonetz, and Archangel; in the north-west, in those of St. Petersburg, Novgorod, Pskof, Vitebsk, Vilna, Livonia, and Esthonia; and, finally, in the Polish governments of Warsaw. All the above are in European Russia. In Asiatic Russia the presence of the disease has been recorded in the Transcaspian province, in the territories of Uralsk, Akmolinsk, and Semipalatinsk, and in the Syr-Daria and Ferghana provinces of Russian Turkestan; in the Terek and Kuban territories of the Caucascus, and in the governments of Tiflis, Baku, Elizavetpol, and Kutais in Transcaucasia. Finally, in Siberia, the governments of Tomsk, Yeniseisk, and Irkutsk were all invaded by the infection.

The epidemic is now declining in all parts of the Russian empire and in the south it has almost disappeared. Its degree of severity has varied greatly in different parts of the country. It has been most intense in the governments along the valley of the Volga, in the Don Cossack Territory, and in St. Petersburg, in European Russia. The returns from Asiatic Russia have been less complete, but there is already evidence that the disease has been fairly active in the northern Caucasus, in the Uralsk Territory, and perhaps elsewhere. This year's epidemic has been more severe than last year's. It may be recalled that in 1907 the disease broke out on the Volga in July and spread to a great part of both European and Asiatic Russia; but from the beginning of that outbreak to Dec. 10th (New Style), when the epidemic was practically extinct, the total cases recorded numbered only 11,934 and the deaths 5706[1]; whereas, as just shown, in the present year these figures have already been nearly doubled and the epidemic is still far from complete extinction. The area covered by the two outbreaks has been very much the same; in each year the Volga Valley has suffered most and in each year the infection has travelled to most parts of European Russia and to some of the principal provinces of Central Asia and Siberia. Last year, however, St. Petersburg escaped, whereas this year it has suffered severely; in the present year also the disease has spread to the extreme north in Europe, invading the Olonetz, Vologda, and Archangel governments. This was not the case last year. The epidemic in St. Petersburg has, from all accounts, been a decidedly severe one. No official figures for the total numbers of cases and deaths there are as yet available, but there is reason to believe that they will prove to be as high as in the great epidemic of 1892. In that year there were 4391 cases with 1357 deaths in St. Petersburg.

Last week news was received that cholera had appeared in Tabriz and its neighbourhood. The extent of the outbreak there is not known. In the present disturbed state of that city and of the province of Azerbaijan the appearance of cholera is a most unfortunate occurrence and one that may well lead to disastrous consequences.

The subsidence of cholera in southern Russia just at the beginning of this year's Moslem pilgrimage is, on the other hand, a matter for congratulation. During the past week the first steamer carrying pilgrims from Russian ports has passed down the Bosphorus. It may be recalled that last year the Constantinople Board of Health formulated a unanimous "vœu" that Russia would apply to the pilgrims before departure the measures of medical inspection, disinfection, and, if possible, a preliminary quarantine, such as have been for years past applied by the Indian authorities to their pilgrims. This year the Russian Government has acceded to this wish; a large lazaret has been put up at Odessa; the pilgrims all start from that port; and they are subjected to a medical inspection, the disinfection of their clothes and effects, and a preliminary observation in the lazaret of five days' duration. Pilgrim ships that have undergone these measures are now allowed to pass the Bosphorus and Dardanelles *en contumace* and proceed directly to the Abu-Saad lazaret, near Jeddah, where they undergo a final disinfection. Any pilgrim ship, on the other hand, that has not undergone the measures before departure is sent to the lazaret of Sinope on the Black Sea, where the same

[1] THE LANCET, Jan. 18th, 1908, p. 189.

measures are applied to them. There is thus good reason to hope that this year's Haj may escape the infection, though for the next few weeks there will still be some anxiety on this score. Last year's pilgrimage was, it will be recalled, a badly infected one, and there is no doubt that it derived its infection from the pilgrims coming from the North and traversing cholera-infected country in European or Asiatic Russia. There are signs that this year's Haj will be a very numerously attended one, so that it is all the more to be hoped that it will escape the disease.

Constantinople, Nov. 7th.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS AT WASHINGTON.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

WORK OF THE SECTIONS.

A Ministry of Public Health.

New York, Nov. 4th.

IT would be difficult to enumerate even in mere catalogue form the great number and variety of questions discussed in the seven sections. Without professing to select the most important I can only in concluding these notices of the discussions mention a few of the topics that happened to have come in my way. Of these also I will only select those that are of practical importance. Among the latter and as in a sense embracing all other questions, is the demand for the creation, in all countries, of a Ministry of Hygiene. The American Association for the Advancement of Science elected a committee of 100 persons to attend especially to public health questions. The president of that committee, Professor IRVING FISHER, of Yale University, appeared before the Sixth Section of the Washington Congress and made a speech which clearly proved that he had not realised the fact that he was addressing an international congress. But, nevertheless, he gave very good reasons for "the organisation of all existing national public health agencies into a National Bureau of Public Health, with such power over sanitary conditions connected with factories, mines, tenements, child labour, and other such subjects as are properly within the jurisdiction of the Federal Government and do not interfere with the power of the States controlling public health agencies." Of course this motion should have ceased at the words "and other such subjects"; the rest is purely American and therefore does not concern an international congress.

Dr. HENRY WARD (Nebraska), and Dr. LUTHER H. GULICK (New York), while speaking of health measures to protect school children, incidentally supported the proposal to create a health government department. But Dr. F. G. BUSHNELL (England) imparted an international aspect to the discussion by urging that the chief of the health department should be a member of the Government. In other words, that in all countries there should be a Minister of Public Health. Dr. J. G. B. Bulloch, who is a cousin of President Roosevelt, has joined with many others in advocating the creation of a national department of health, and I am not aware that a single word was said against this proposal. It is therefore very unfortunate that a motion to this effect was not submitted to the final meeting of the entire Congress.

Railway Sanitation.

One of the duties of such a Ministry of Public Health would undoubtedly be to see that uniform measures and regulations were applied to all railway carriages and other public conveyances so as to reduce the risk of contagion or infection while travelling. On this subject some energetic words were uttered at Washington. Dr. H. M. BRACKEN (St. Paul), who is the executive officer of the Minnesota State Board of Health, led the attack. He said that it was difficult to define the status of a thing which did not exist and there was no such thing as railway sanitation in the United States. There were interstate regulations relative to the transit of hogs, cattle, and commercial products, but any proposal dealing with human beings was rejected on the ground that it might interfere with the autonomous government of the different States. Here was a good opportunity of indicating that what applies to the States of America applied to the different nations of Europe, but, as usual, the international aspect of the problem was missed, yet we have had international agreements in Europe regarding railway passengers and international through trains have to submit to the varying laws of the countries through which they travel. What is now wanted are some uniform regulations in regard to cleaning and disinfecting passenger cars. In America this function is often neglected. A representative of the Pullman Car Company replied to these strictures that their cars were fumigated at regular intervals and each time the carriage is known to have carried a sick person. In answer to questions he confessed that they did not employ detectives to ascertain who was sick, but when informed that there was some danger of infection they fumigated the car, and this at their own expense. The discussion showed how much this question of railway sanitation has been neglected and how necessary it is that in future sanitary experts should help to devise methods for the construction of railway carriages and their sleeping compartments.

Tuberculosis and Factory Legislation.

Of course, the question of ventilation in connexion with tuberculosis came to the front in many discussions. It was studied, as just mentioned, in relation to railway carriages and also as a problem more constantly before us in relation to dwelling-houses, factories, and workshops. But here again the Congress was singularly lacking in precision. Everybody agreed as to the absolute necessity of pure air to prevent tuberculosis, but where is the resolution proving equal unanimity of opinion as to any one special law or measure that all nations might adopt and enforce? A practical proposal was needed indicating how to secure pure air, not under all conditions that might be qualified as Utopian, but at least in one or two industries or in some special categories of dwellings. Dr. G. M. PRICE (New York) certainly made some comprehensive proposals, and, unlike most of the other American speakers, backed them up by showing how some of his suggestions had already been applied in Europe. He demanded that the State should license all trades and industrial establishments; of course, this is done in many countries and occupations are qualified as salubrious and insalubrious. Then he asked for the preliminary physical examination of candidates for employment, which is already done in regard to certain sorts of work, such as railway servants. This should lead to the study of industrial pathology and has done so in Germany under the direction of the medical staff of the German Krankenkassen-verein. Dr. Price likewise quoted the resolutions of the International Congress of Hygiene held at Berlin in 1907, urging improvement in the medical and sanitary inspection of factories. The statistician of the American Prudential Insurance Company, Mr. F. L. HOFFMAN, spoke so as to explain that tuberculosis was especially frequent in trades which created a quantity of dust. He classified the dust of 30 different occupations and maintained that if proper measures dealing with the dust and securing efficient ventilation in these trades were enforced some 28,000 lives might be saved annually in the United States alone.

Mr. JOHN MARTIN (New York) pointed out that of the 46 States only 17 provide by law that factories shall be ventilated so as to remove by means of fans and to render harmless all gases, dust, or other impurities. Only six States insist on the periodical lime-washing or painting of walls and ceilings, and not more than eight States demand a minimum air space for each worker. He urged that every State should by a Federal law be forced to apply the laws of the most progressive State. Professor A. WINSLOW (Massachusetts) and others showed that where an office or a school was well ventilated there was much less sickness and much more work was done. Nothing is more economical in its effects than to spend money on ventilation. Figures in regard to printers were given setting forth the prevalence of chest diseases where the ventilation was bad and Oldendorff's figures with regard to the terrible percentage of cases of tuberculosis among the iron workers and grinders of Germany were quoted. Altogether there was plenty of evidence forthcoming to prove the inefficiency of factory legislation, especially in the United States, and no one disputed the fact that better and far-reaching laws were urgently needed. In these circumstances it is most unfortunate that no comprehensive resolution was presented to the plenary meeting at the close

of the Congress so as to proclaim these opinions to the world.

Sunlight and Ventilation.

If laws are necessary to secure good sanitation in factories and workshops these are no less required in regard to the construction of private dwellings and especially of tenement dwellings. Dr. CHARLES DENISON (Denver, Colorado) qualified tuberculosis as being practically a "house disease due to deficient air renewal and sunlight," and then asked what law of ventilation could be devised and enforced to secure its prevention. He proposed a compromise between Parkes's rule of 3000 cubic feet per person within a room and De Chaumont's renewal rule of two-thirds of a square foot space inlet and outlet per person. This compromise is 2000 cubic feet of space per person with entire renewal of the air once every hour, but Dr. Denison was careful to add that this would be insufficient if not aided by sunlight. He urged that "we must take into consideration the influence of the sun, the source of atmospheric electricity, in fitting the air for respiration."

Dr. SAMUEL BERNHEIM (Paris) defined tuberculosis as "a disease of darkness," and explained that in France, where families lived in apartments, though the occupants of the lower flats were wealthier and paid higher rents they were more susceptible to tuberculosis than the dwellers in the upper and cheaper flats, because the latter apartments, though similar in every other respect, received more light and sunshine. Even cleanliness could not compensate for the lack of light, and very clean and tidy people living in dark tenements were the ready victims of the disease.

The newest pronouncement on this subject was by M. AUGUSTIN REY (Paris), who pointed out that in the planning of towns the angle formed by the direction of the street with the meridian had hitherto been overlooked. With houses of equal height the width of the streets should vary with each change of frontage. A street running due east to west must be 50 per cent. wider than a street running due north to south. The other streets should vary in width according to their distance from these two extreme limits. But this rule again would be modified according to the degree of latitude of the town to be built, the object in all cases being that the lowest inhabited floor should be able to receive the direct rays of sunshine for one and a half hours on the shortest day of the year. At Baltimore M. Rey subsequently gave a lecture with numerous lantern slide illustrations explaining his theories. He demonstrated how unhealthy houses were built and how they might be reconstructed so as to respond to the laws of health.

Tuberculosis and the Hours of Labour.

The Hon. DAVID J. BREWER, of the Supreme Court of the United States, delivered an address in Section V. on what the law in America might, and might not, do in regard to the prevention of disease. He said that an employer can be compelled by the State to protect those whom he employs. He must provide them with fire-escapes, with ventilation, and whatever else is necessary so as to prevent their health being unfavourably affected. The employer must see that the employee does not continue to work if the work causes him injury. On the other hand, if the employment is not at all unhealthy then the American Declaration of Independence gives the inalienable right to liberty in the pursuit of happiness. Therefore, continued Judge Brewer, a man may work 12 hours a days if it does not injure his health. There is not a judge in our courts, he added, who does not work ten or more hours a day.

Dr. WELCH (Baltimore) replied that these were beautiful theories which were not put into practice. Obviously if this theory was applied the hours of labour could be restricted in a very large number of occupations, and this not merely in regard to the work of women and children but also of adult males.

Dr. H. P. FAVILL (Chicago) argued that what labour demands and what capital refuses have nothing to do with the thing. The intervention of the law depended on the national necessity of such intervention. It was only necessary to realise the power of health as a means of production to make health the first consideration. Of course, crowding produced conditions favouring the spread of tuberculosis, and they had to create a new moral conception as to the necessity of air-supply. The State should declare what are the standard conditions of healthy labour. Fresh air during working hours was the first requirement in fighting tuberculosis.

Dr. LEONARD (Ohio) entered an earnest protest against Judge Brewer's conception that a man might work as long as he liked if it did not injure his health. Man had other duties to perform than earning a livelihood. He had his duties towards his family and his duties of citizenship. The speaker then described the case of a railway servant, a model workman, who accepted all the overtime work he could get so as to add to the income and comfort of his family. The consequence was that he had no time to exercise any moral control over his children, and one of his sons was sentenced to a term of confinement in the reformatory to which Dr. Leonard is attached. This boy had lost his birthright; his father was a stranger to him, otherwise he might have become a good citizen. Most of the reformatory and refuge boys had no father. From the moral as much as from the health point of view such excessive work as divorced parents from their children might well be prohibited.

Here, then, a great question was put forward. To what extent and in what circumstances would the limitation of the hours of labour tend to reduce the prevalence of tuberculosis? Again we have to lament that there is no record of a vote indicating what was the opinion of the Section that had discussed at some length this important and practical question.

Tuberculosis and Milk and Meat.

Undoubtedly the most striking feature of the Washington Congress was the extraordinary prominence given to the question of bovine tuberculosis. There is in America such an enormous business in the rearing of cattle that a special Government department has been created to deal with it, the Department of Animal Industry. At the Congress a special section, Section VII., was devoted to the question of Tuberculosis in Animals and its Relations to Man. The great joint meeting of this section with Section I. (Pathology and Bacteriology), at which the majority of the members of the other sections also assisted, has already been fully described.

In Section VII. Dr. J. G. RUTHERFORD, who holds a high post under the Dominion Government of Canada, introduced a useful discussion as to what could be done to protect cattle. Formerly it used to be urged that the rich would best protect themselves from the spread of disease by promoting good sanitation among the poor. We have now got far beyond this, for the whole of the work of Section VII. was devoted to protecting mankind from disease by promoting good sanitation and better health among cattle. But Dr. Rutherford explained how great were the difficulties. To kill all cattle that showed a reaction to the tuberculin test was not practical. Killing and disinfecting did not suffice and no compensation the State could give would meet the case where choice cattle were concerned. Also cattle that have been tested several times fail to react to further tests, though they may have become tuberculous in the interval. Then a great outlay and much labour might be rendered futile by the dishonesty of a farmer and a veterinary surgeon. Antipyrine could be mixed with sugar and meal and is licked up by the animal without anything occurring to create suspicion. So the thermometer readings do not prove much and there are lunches and other diversions to keep the veterinary surgeon away when the temperature rises. Even with very close and constant examinations mistakes are made. It would be more practical to kill young animals and to devise methods of segregation and of treatment for the older animals. Some sort of legal control was absolutely necessary and all milk from cows that reacted to the tuberculin test should be pasteurised. Dr. Rutherford thought that one or more clinical cases occurring in a herd should suffice to justify Government interference together with the compulsory preparation of a report and he quoted THE LANCET as endorsing this opinion. He did not think that any encouraging results had been obtained by prophylactic inoculation, but while he was a pessimist in regard to the new methods he was absolutely sure and confident in regard to the beneficent effects resulting from the careful ventilation of stables. Stockmen are breeding bacilli faster by want of ventilation than could be stamped out with tuberculin. Open-air treatment for cattle was the most promising preventive. Nature provided the necessary protection; the remedy was to get closer to nature.

Dr. BUTTLER and other American veterinary surgeons protested that the outdoor treatment was not effective; that, as a matter of fact, cattle were out of doors for nine months in the year and were tuberculous all the same. Then, again, the use of tuberculin helped to spread the disease, for the cattle thus shown to be tuberculous were sold as soon as possible and thus went to other farms where they contaminated other herds.

Dr. MAYER (Louisiana) said that his State was waiting for the section to decide so as to legislate on the matter, but the section did not decide, so the legislature of Louisiana has been left without guidance.

Dr. A. A. WLADIMIROFF, representing the Superior Medical Council of the Russian Empire, urged that it was necessary to have tuberculin as well as hygiene. The former was the only means of diagnosis. Near St. Petersburg there were milk farms; sometimes as many as 60 per cent. of the cows had been found to be tuberculous. Even when all diseased animals had been eliminated it was necessary to test every year. This gave the veterinary surgeon the right of entry and brought about an annual review of all the cattle.

Professor ARLOING (Lyons) thought that milch cows should be tested twice a year and all doubtful milk pasteurised. Veterinary surgeons should control dairies for other reasons besides the prevention of tuberculosis, and he described epidemics of enteric fever which had been traced to dairies.

Dr. MAYER protested that too much reliance was placed on tuberculin. It was wrong to lose sight of clinical diagnosis and he did not believe that a syringe would prove a full substitute for this hardly acquired knowledge. A clinical report might justify the seizure of cattle but not a tuberculin test.

In replying to the very long discussion that had been held Dr. RUTHERFORD explained that meat inspection in Canada was only a year old. Deaths had been traced to unwholesome food and insanitary dairies. What, however, was the use of tracing tuberculosis to a farm if there was no legal means of action?

Altogether, it will be seen that the whole question is still in need of crystallisation. Some more clearly defined proposals likely to be supported by a majority of experts have yet to be brought forward. Nevertheless, much work has been done.

Dr. A. D. MELVIN, chief of the United States Bureau of Animal Industry, was able to report that in 15 years, 1893 to 1908, Federal and State officials had had tested with tuberculin 400,000 cattle, mostly dairy cattle, and 37,000 reactions had been obtained. This meant 9·25 per cent. They found that on an average 10 per cent. of the milch cows, only 1 per cent. of other cattle, and 2 per cent. of the hogs were infected with tuberculosis. This was equal to 3·5 of all cattle. Of 23,860 reacting cattle that were slaughtered, lesions of tuberculosis were found in 23,585, a percentage of 98·81, showing the very great accuracy of the tuberculin test.

Dr. JOHN R. MOHLER, chief of the Pathological Division at Washington, pointed out that much valuable information was gained by tracing tuberculous animals at the abattoirs back to the farms whence they came.

This is a good idea and might be adopted in England; thus whenever an animal at a slaughter-house is found to be tuberculous the medical officer of health of the district whence the animal came should be informed so that he might institute an inquiry at the farm in question. It is obvious that all these very practical and urgent questions should be more fully discussed and the chief result of the meeting at Washington is to show the necessity of further and closer investigation.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Health Visitors in the Rhondda Valleys.

THE members of the Rhondda urban district council are to be commended for their action in carrying out the advice of their medical officer of health (Dr. J. D. Jenkins) with regard to the appointment of lady health visitors. Two of these officials are to be appointed forthwith at a commencing salary in each case of £80 per annum, rising to £120. The inspecting staff in the Rhondda has long been undermanned. When there was a population of 80,000 persons there were five inspectors and now that the population has increased to over 120,000 there are only six, so that there is quite room for the services of the two health visitors whom it is proposed to appoint. The salaries to be offered are those which are paid to the sanitary officers.

Improvement of Milk-supplies.

At a meeting of the West of England and South Wales Branch of the Society of Medical Officers of Health held at Bristol on Nov. 19th it was decided to arrange a conference with those interested in the production of milk, in order to discuss the best means to be adopted for the improvement of milk-supplies, more especially with respect to improvements at the sources of supply. Mr. L. M. Bowen-Jones, the President of the branch, urged that although dirt in milk was responsible for much infantile mortality, it was probable that even more children died from the want of milk, so that the milk trade was one which it was in the public interest to foster and to protect. He proposed that local associations of dairy farmers should be asked to formulate suggestions and advice to the trade as to the best available means of improving existing conditions at many dairy farms. It would thus be demonstrated to hostile critics that the farmers themselves realised their responsibilities, while those whose business it is to administer existing laws would be assisted very considerably in their work. He further urged that the dairymen should be made to realise that the trade in which they were engaged was unique, for it dealt with a necessary article of food which formed the almost exclusive diet of a large proportion of the most susceptible units of the population—infants and invalids—and that milk was unique among articles of food in its powers of collecting and fostering micro-organisms which were injurious to health and which might even be fatal to the infant consumer. He expressed the opinion that it was most discreditable to our sanitary administration that the legal powers which it was competent for rural sanitary authorities to exercise had either been entirely ignored or so badly administered that in many rural districts there existed practically no supervision of dairy farms at all.

The Provision of Nurses in Monmouthshire.

An association was recently formed in Monmouthshire for the purpose of training or otherwise providing suitable nurses throughout the county. It is proposed to encourage two grades of nurses—one to include highly-trained fully-certificated district nurses in towns with a population of 5000 persons or more, and another to include midwives fully trained and certificated in accordance with the requirements of the Central Midwives Board. The new association as well as coöperating with existing nursing organisations will itself train suitable women as nurses and midwives. It is proposed to establish a training home at Pontypool for the eastern valleys and another for the western valleys at Tredegar. These are to be utilised as homes of rest for occasional nurses and as residences for emergency nurses. There can be no doubt as to the need for such an association among the industrial sections of the population and if the details of the organisation are properly safeguarded against abuse it will render valuable service.

A County Medical Officer of Health for Pembrokeshire.

The Pembrokeshire county council has referred to the sanitary committee the question of appointing a county medical officer of health. The medical inspection of the school children in the county is at present being carried out by local practitioners, but there has not been appointed any official to direct these inspections or to report upon the results. When the question was under discussion at a recent meeting of the county council more than one member expressed the opinion that it was impossible to carry out the detailed examination of the children which was required by the Board of Education in three or four minutes, and that a fee of 1*s.* or 1*s.* 6*d.* was far too little to pay for a thorough examination.

Cardiff Mental Hospital.

There is accommodation in the new Mental Hospital at Cardiff for 750 patients, including 336 men and 414 women, and in the middle of October there were occupying the wards 351 men and 329 women. The weekly cost per patient is 13*s.* 5*d.* At the last visit of the Commissioners in Lunacy they expressed their regret at the decision of the visiting committee to postpone the erection of an isolation hospital. It

seems a pity that an institution which in other respects is so admirably designed should be without this very necessary adjunct. The absence of proper means of isolating infected patients must add considerably to the difficulties of administration and a very grave responsibility would rest upon the committee if the present means at the disposal of the medical superintendent for coping with an outbreak of infectious disease proved inadequate.

The Wiltshire County Council and the Medical Inspection of School Children.

At a meeting of the Wilts county council held on Nov. 18th under the presidency of Lord Bath, considerable discussion took place in reference to the medical inspection of school children. Hitherto the work has been done by the district medical officers under the supervision of the medical officer of health of the county, but at this meeting a scheme was submitted by the finance committee recommending the appointment of two whole-time medical officers at salaries of £250 each with travelling expenses of £125 each. Other recommendations were made and the total estimated cost of the scheme was £1055. Much opposition was manifested to these suggestions and an amendment was moved that the matter should be sent back to the general education committee, with an expression of opinion that the present system of inspection should be continued. This amendment was eventually carried by 22 votes to 14.

Exeter "Carnival."

As a result of the recent "carnival" which was held at Exeter the sum of £165 has been handed over to local charities. £80 were awarded to the Royal Devon and Exeter Hospital, the remainder being divided amongst the smaller institutions.

Nov. 24th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Medico-Psychological Association.

THE half-yearly meeting of the Scottish division of this association was held in the hall of the Royal College of Physicians, Edinburgh, on Nov. 20th. There was a large attendance of members and Dr. T. S. Clouston occupied the chair. After the chairman had referred in fitting terms to the death of Dr. J. Cameron of Lochgilphead, and the loss thereby to the association, the superannuation allowances committee reported that Sir John Jardine had stated his intention of bringing in next session the Bill drafted by the division, and the intention was expressed to approach all Scottish Members of Parliament that they may assist in the promotion of the measure. Mr. Hugh F. Watson, senior assistant medical officer, Ayr District Asylum; Dr. W. Tuach-Mackenzie, medical superintendent, Dundee Royal Asylum; Dr. W. McWalter, medical officer, H.M. Convict Prison, Peterhead; and Mr. George Dunlop Robertson, medical officer, Smithston Asylum, Greenock, were unanimously admitted members of the association. Dr. W. Ford Robertson and Dr. R. Dods Brown communicated a paper on the Bacteriology of the Cerebro-spinal Fluid in General Paralysis of the Insane and gave a microscopical demonstration. An animated and lengthy discussion followed the reading of the paper, which was taken part in by Dr. Lewis C. Bruce, Dr. H. C. Marr, Dr. G. M. Robertson, Dr. G. D. McRae, Dr. J. H. Macdonald, Mr. W. Muirhead, and the chairman. The speakers were in general agreement with Dr. Ford Robertson, except Dr. Marr who said that during the course of three years' research in the cerebro-spinal fluid he had examined 53 cases of general paralysis and had come to the conclusion that in ordinary general paralysis there was no microbic organism present and that the disease was probably not of microbic origin.

Royal Medical Society of Edinburgh.

At a meeting of this society held on Nov. 20th Dr. T. B. Johnston read a paper on Jaundice. He especially discussed the two theories of jaundice: (1) the obstructive; and (2) the toxæmic, and reviewed at length the arguments which have been brought forward in support of each. Dr. A. E. Turnbull read the interesting case of a boy, aged 14 years, who suffered from Carcinoma of the Large Intestine, and who subsequently developed symptoms which led to the diagnosis of meningism. Dr. Turnbull discussed the differential diagnosis between this and true meningitis. Mr. Buist showed a large number of metallic and other articles which had been swallowed by a man in a fit of despondency. Mr. Gunson showed an interesting case of Klumpke's paralysis.

The Causes of Crime.

At a meeting last week of the Royal Philosophical Society of Glasgow Mr. James Devon, the medical officer of Duke-street Prison, lectured on the causes of crime. Mr. Devon has come to be recognised as one of the most capable criminologists in the country and his views were received with much interest. At the commencement attention was drawn to the statement usually present in official reports to the effect that the great majority of those in prison were there through drink. He protested against the practice of singling out one from among our vices and attaching to it the blame of all our social evils. The most troublesome and dangerous criminal was the professional, and no more than other professional persons did he go to business the worse for drink. He thought the facts showed that drink puts a man into a condition in which he was more liable to commit a crime or police offence than when sober; that while drinking was common to all in all parts of the country police offences and crimes occurred mainly in closely populated districts; that the amount of crime and police offences in Scotland was not dependent on the amount of drinking alone, but was mainly dependent on indulgence in drink under certain conditions of urban life; and that the major portion and the most serious kind of crimes against property were not due to drink. Nor could it be said that the amount of crime in Scotland was in relation to poverty alone. In some parts of the Western Highlands and Islands the poverty was appalling and yet there was an entire absence of crime. All experience showed that crime occurred not in proportion to the number of the population but to its density. In particular, overcrowding not only bred disease but it tended to destroy decency, and if they were to consider the circumstances that make some kinds of vice and crime so easy and even natural to many attention would have to be given to this aspect of city life.

Prevention of Consumption in Glasgow.

The annual meeting of the Glasgow branch of the National Association for the Prevention of Consumption took place last week. At Bellefield Sanatorium, which is under the auspices of the society, 98 patients were admitted and 95 were discharged during the year, making a total of 368 patients treated since the opening four years ago. Of the 95 discharged 27 had the disease arrested, 38 were much improved, 20 were improved, nine were not improved, while one had died. During the year a new pavilion has been erected to accommodate 22 additional patients. A special appeal was made for funds, as the ordinary income last year was less than the expenditure by £480.

Nov 24th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Dublin University Biological Association: Opening Address on History of Irish Medicine.

THE most interesting in many of its features of the public professional events of the past week was the opening meeting of the thirty-fourth session of the Dublin University Biological Association, which was held on Nov. 19th in the debating hall of the Graduates' Memorial Building, Trinity College. There was a large and highly representative audience, many of the most prominent senior members of the medical and other professions being present as well as a crowded congregation of students. After the distribution of medals to the various successful competitors by the outgoing President (Dr. R. J. Rowlette), Dr. T. Gillman Moorhead delivered the opening address which dealt with the subject of the "History of Medicine in Ireland." The lecturer began, very literally indeed, with the beginning—i.e., in prehistoric antiquity—and the best testimony to his skill and success was furnished by the fact that an unusually long paper was listened to throughout with attention by all his audience. The Irish medicine man of the pre-Christian centuries, the introduction of Christianity by St. Patrick

with its results, the teachers imported by Alfred the Great to educate his kingdom, and by Charlemagne to re-civilise and re-Christianise the chaotic débris of the Western Empire were all mentioned, necessarily in very few words. The hereditary physician of the Middle Ages as well as the hereditary harper received a passing word of recognition; the cleavage of the *ars medendi* into two sections which necessarily followed the forbidding of the shedding of blood by members of the clerical orders (by the Council of Tours) was duly referred to—with the engrossment of the practice of surgery by "the barbers and periwig makers," and the establishing of the barbers of Dublin as a guild in 1446, the oldest of the medical guilds of the British Islands, and the original precursor of our Royal College of Surgeons. The work of the latter was appreciatively referred to and the premier position of the Dublin School of Medicine in the past century was indicated. If there was anything in Dr. Moorhead's interesting summary which required some verbal revision I would suggest that it was the apologetic tone in which he referred to the fact that the Irish school had not been distinguished by great *original* contributions to medical knowledge. As a mere matter of fact, Ireland has always furnished the germs of ideas which supplied *originality* and fame to others. Sir Astley Cooper, the "greatest of England's surgeons," owed his cosmopolitan reputation in his specialties to dissections made for him by our own Abraham Collis in the days of his junior professional *wanderjahre!* And this case is but one of 2000.

Royal Hospital for Incurables, Dublin.

The annual sale of work produced by patients in this hospital was formally opened on Nov. 19th by Lady Aberdeen. The exhibition consisted of over 1000 articles, chiefly of clothing and varieties of fancy work. The hospital funds derive nothing from the sale, as the entire proceeds are distributed among the patients in the institution without any discount whatever. The sale has always been a popular one, as the institution stands high in the public estimation. Patients are admitted (on election) from all parts of Ireland, without distinction of creed or politics, the only essential qualifications being poverty and incurable disease.

Richmond Lunatic Asylum: Electricity v. *Gas.*

The monthly meeting of the Richmond Asylum joint committee, which was held on Nov. 19th, was largely occupied with a discussion of the relative merits and demerits of gas and electricity as illuminating agents from the general view-point of the physicist and engineer and the particular one of the financial and medical representatives and officials of their own institution. After the original suggestions of the desirability of lighting the asylum buildings with electricity the lighting committee of the corporation had approached the joint committee (and also the North Dublin union guardians) on this subject. A subcommittee was appointed by each board. These bodies met and discussed the bearings of the subject very thoroughly. One of the special results of this movement was an offer from the gas company to light both institutions on a revised scale. They practically offered, indeed, to reduce the total amount of their bill by (approximately) 45 per cent., to assume the responsibility of the upkeep of the installation, and to relieve the institution of responsibility in connexion with variations of price. The chairman of the joint committee meeting, however, expressed the opinion that electricity should be adopted. Large extensions of their buildings were about to be made. Electricity was, he considered, cheaper than gas and in course of time it would become cheaper still. It was decided to send the report back to the subcommittee with the view of obtaining further explanation on certain points.

The University of Belfast.

The first meeting of the Belfast Commissioners took place on Nov. 18th at Queen's College, Belfast, Judge Shaw, K.C., being in the chair. The Commissioners appointed Mr. A. Jaffé, M.A. Camb., to be their secretary. They framed a number of questions, in answer to which they invite reports from the corporate body of Queen's College, Belfast. They will meet again on Dec. 29th. The new University is to be called the Queen's University of Belfast.

Compliment to Alderman Dr. J. King Kerr, J.P.

On Nov. 18th Alderman Dr. J. King Kerr, chairman of the public health committee, was, at a public meeting in the City Hall, Belfast, presented with an address and with his portrait by his colleagues in the corporation and a number of friends. His portrait is to be hung in the City Hall. His wife was also presented with a replica and with two silver candelabra. The Lord Mayor presided, the ex-Lord Mayor (Lord Shaftesbury) made the presentation, and speeches were also delivered by Dr. King Kerr, the High Sheriff (Councillor McCaughey), Sir Otto Jaffe, and Dr. Peter O'Connell, a former member of the public health committee, now no longer in the city corporation.

Nov. 24th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Education Grants.

AMONG the numerous clauses of the budget of public education, which was discussed by the Chamber on Oct. 30th, was one asking for the reinsertion of the clause recommending a grant of 15,000 francs. This clause had been inserted by the Government but was refused by the Financial Committee. The object of the grant was the creation of a chair of special and general hygiene at the Collège de France. The President of the League of Education, M. Dessoye, argued in favour of the grant. The chairman of the Financial Committee, however, said that for a certain number of years past a large number of new chairs had been created at the College of France perhaps not always on entirely scientific considerations. Without asking the Minister of Public Instruction to abandon the right of creating chairs at the College of France the chairman went on to say that he proposed, in all cases except those in which a man of exceptional scientific attainments cannot be overlooked, that the Minister should take the opinion of men competent to pronounce upon the proper sequence of the creation of chairs. He demanded, further, that the chairs at the College of France should be reserved for eminent men who, in addition to the possession of all the necessary diplomas, have a paramount claim by reason of their scientific attainments and by having carried out original research. M. Dessoye stuck to his guns and deplored the fact that France did not possess institutes of hygiene similar to those which exist in Germany and the United States, which should formulate the laws of hygiene after experience founded upon experimental research. The proposal was once more vetoed by 401 votes to 116.

Troubles at the Faculty of Medicine.

The disturbances at the Faculty of Medicine of which I spoke in my letter published in THE LANCET of Nov. 21st, p. 1565, continued. At last on Nov. 16th it became known that on Nov. 14th M. Landouzy, the dean of the Faculty, received a delegation of the students who handed in a series of demands in writing. These were: (1) that only five students should dissect on one body; (2) that the school at Clamart should be re-opened; (3) that first and second year men should not be combined in class; and (4) that the arrangements for the teaching of osteology should be restored as they were, with an examination at the end of the course. The committee of the Faculty whose duty it is to look after the teaching of practical anatomy and whose members are M. Nicolas, professor of anatomy, M. Quénu, professor of operative surgery, M. Marie, professor of pathological anatomy, and the Dean as chairman, are of opinion that a certain number of students should be told off to dissect at Clamart, which course would set free a certain number of tables at the École Pratique. The remaining demands should be referred to the professor of anatomy.

On Ionisation.

At a meeting of the Society of Surgery, held on Nov. 11th, M. Tuffier related some researches which he had recently made into the penetration of the body by drugs under the influence of an electric current. His paper mainly dealt with the use of nitrate of silver in ophthalmia. As for salts which had an affinity for the skin (*en rapport avec la peau*), M. Tuffier considers that they penetrate the skin but do not pass very deeply into the tissues. Also he considers that although the use of sodium salicylates by cataphoresis in painful arthritis is accompanied by relief of the pain, this result is due not to the action of the drug but to the action of the electric current.

The Academy of Medicine.

At the meeting of Nov. 17th M. Quénu was elected a

Member of the Academy of Medicine in the room of Professor Terrier, deceased. At the meeting held on the 24th the President announced the death of M. Hamy, professor at the museum and a member of the Academy. He also announced the death of Professor Joffroy who had died that morning.

Nov. 24th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Medical Society.

THE winter session of the Berlin Medical Society opened on Oct. 28th, Professor Senator being in the chair. Professor Meyer reported the case of a man, 57 years of age, in whom a set of artificial teeth had slipped into the trachea as low down as the bifurcation without producing any immediate symptoms, so that the dentist in whose practice the accident had happened believed that the teeth had entered the stomach. A febrile bronchitis occurring after 24 hours was ascribed to a chill, and as the state did not improve the patient was sent to the seaside. The bronchitis became much worse there and the patient suffered from dyspnœa. He was seen five weeks after the accident by Professor Meyer who by bronchoscopy found the foreign body in the bifurcation of the trachea. He removed it by a forceps. Professor Oppenheim reported the case of a woman, 37 years of age, who for more than a year suffered from headaches, difficulty in articulation, giddiness, vomiting, and bradycardia. On examination he found sensory and amnestic aphasia and agraphia, bilateral optic neuritis, paresis of the right facial nerve, and tenderness on percussion of the left frontal region. He diagnosed a growth of the left temporal lobe and recommended an operation which was performed by Professor Krause. A growth of the size of an apple proved to be present in the very place indicated, issuing from the arachnoidal membrane and growing into the cerebral substance. The growth was enucleated and the patient felt better when a fortnight afterwards a paresis of the right arm and of the face supervened. The paresis disappeared sooner than usual, but eight months later, with severe general symptoms, vomiting and unconsciousness, a total right paresis occurred. Professor Krause trephined over the place of the first operation and again found a growth of almost the same size, which had evidently grown from a small piece of the first tumour left behind. After enucleation the patient made a quick recovery. She was shown to the society; there was no paresis but the articulation was still impaired. Professor Krause gave a detailed account of the operation which he performed in two sittings. Dr. Zuelzer read a paper on the "Hormone" of the Peristaltic Movement. He said that it had been discovered by recent biological research that certain organs produced substances which were conveyed by the circulation to other remote organs and produced in them certain alterations. He alluded to the researches of Professor E. H. Starling who found that the embryo produced a substance which stimulated the development of the mamma during pregnancy. This substance, termed by him a "hormone," when injected into virgin rabbits produced a swelling of the mammæ. The same was the case with secretin, another "hormone," a substance found by Dr. F. Bayliss and Professor Starling in the mucous membrane of the duodenum and the intravenous injection of which produced a secretion of the pancreas. Dr. Zuelzer had found by recent researches that the peristaltic movement of the intestines was also caused by a "hormone" which he termed the "peristaltic hormone" and which he separated from the mucous membrane of the stomach. It was essential for the production of the substance that the stomach of the animal should be in an active state of digestion, as it is not found in empty stomachs. When peristaltic hormone was injected into the vein of a rabbit a strong peristaltic movement from the duodenum to the rectum was visible within a few seconds and the excrement in the gut passed through to the anus. As to the method of obtaining the peristaltic hormone he explained that it must be extracted from the mucous membrance of the stomach by a solution of kitchen salt or diluted muriatic acid and the albumin then removed by alcohol. The stomach of rabbits, pigs, and horses and the rennet-bag in cattle contained the hormone. It might also be obtained from the upper parts of the duodenum, but in less quantity and of milder action. Dr. Zuelzer said that Professor Starling had compared the action of hormones with that of alkaloids and that the peristaltic hormone acted like physostigmin on peristaltic movements.

Nov. 24th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Health of the Pope.

"IL Papa sta molto bene" was the reassuring, if guarded, announcement issued yesterday evening by his body-physician, Dr. Petacci, in answer to many inquiries. All the same, the physical state of His Holiness, particularly on Nov. 19th, more than justified the solicitude with which the "archiatro" was approached for authoritative information. In the forenoon of that day he was giving audience to one of the many companies of pilgrims who had come to congratulate him on his sacerdotal jubilee—this one being the "Pellegrinaggio Ligure-Piemontese" (the pilgrimage from Liguria and Piedmont). In reply to their spokesman's address, he had not uttered many words when suddenly his voice failed and he had to request the Archbishop of Vercelli to convey his acknowledgments as briefly as possible. In anticipation of such a breakdown Dr. Petacci had urged the Pope to suspend all the receptions already arranged, but the august patient could not be persuaded to deny himself to the Italian pilgrims whose turn was still to come. Now, however, he has seen the wisdom of his physician's advice; he has not ventured outside his apartment; and one of the most important of the pilgrimages, that from Spain, will have to be received later. The outside world hardly realises the immense strain imposed these many days past on the Pope's energies or the adverse conditions under which it has been kept up. Pilgrimage after pilgrimage had to be received in audience and their special circumstances—often highly controversial, as in the case of the "Pellegrinaggio Francese"—duly considered and commented on in the pontifical reply. Add to this that in the transit from his private rooms to the reception hall he had to pass through draughty corridors of various temperatures, and after exerting his voice in a hall in which the air was charged, not to say vitiated, by the respiration of successive crowds, he had to return mentally fatigued and physically relaxed through the same corridors to the same apartments—in itself a considerable journey. What wonder if, in the humid atmosphere of these last days of torrrential downpour, His Holiness has contracted a "raffreddore" (chill), accompanied with aphonia and even a recrudescence of the arthritic pains from which, after any excessive call on his energies, he is prone to suffer? Nor has he been the only one in the Vatican itself to fall a victim to the malaise seemingly inseparable from high mental and physical tension prolonged through a series of days among pilgrims thronging the Apostolic palace. The major-duomo, Monsignor Bisleti, is now on the sick list from causes similar to those affecting the Pope, and his duties have for the nonce to be discharged by Monsignor Sanz de Samper. Before him, the Austrian ambassador to the Holy See, Count Szeczen, was attacked with measles, and now the Envoy of the Emperor Francis Joseph, charged with a special mandate on occasion of the Pope's jubilee, is "down" with scarlet fever. In truth, pilgrimages in all countries, especially those organised with a religious object, are often the importers of infective or contagious disease in the places to which they are destined. Not only measles and scarlet fever have often been contracted in the crowds consisting of all classes which, on days of special ceremonial, fill St. Peter's, but, as many an English-speaking consultant practising in Rome can testify, variola itself, and that of the grave type known to Italian physicians as "nera" (black), has often been contracted by compatriots with disastrous, if not fatal, consequences. Personal cleanliness, in Latin countries especially, is not a universal characteristic; nay, the Englishman's devotion to the morning bath has but recently been adopted, and only by slow gradations, on the continent, even among the higher orders. Let one typical illustration suffice, put on record by the *Times* Roman correspondent, just

30 years ago, on the occasion of the meeting of the Sacred College to appoint a successor to Pius IX. In the February of 1878 some 60 and more cardinals proceeded to the Vatican, each bound for his special "cella" (room), to take part in the election of a new pontiff. The business involved in the election often extends over days, nay weeks or even months, before the required majority can be got to agree upon the cardinal to be appointed, and so each member of the Sacred College has to take with him the furniture necessary for such a prolonged seclusion from the outer world. Mr. Shakspere Wood, the correspondent above referred to, made it his business to watch each cardinal as he filed into the Vatican with the special appurtenances of his toilet, and, by no means to his surprise, he found that out of the 60 cardinals (or more) on whom he saw the Vatican gates close for an indefinite period there were only two whose personal equipment included a bath, and these were the two English Cardinals—Cardinal Manning and Cardinal Howard. If the princes of the Church, in such overwhelming majority, could dispense with what their British brethren deem so necessary, is it wonderful if their humbler compatriots should be equally resigned to a similar "self-denying ordinance"? The Roman population looks back with pride on its progenitors whose virtues it would fain congratulate itself on inheriting. But one of these was the use of the bath, which the humblest citizen could enjoy in such magnificent establishments as those of Titus, of Caracalla, and of Diocletian, whose very ruins are still among the "Mirabilia" of the Eternal City. It would do well to resuscitate the practice, if only for personal comfort and individual health, to say nothing of the gain to the public in the matter of hygiene, especially on occasions of the *feste* which attract to its basilicas promiscuous crowds of the faithful from all parts of Christendom.

Nov. 21st.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Weather and the Water-supply.

A QUITE unexpected calamity has befallen this city in consequence of the protracted absence of rain and of the frost. Although Vienna has boasted of an excellent supply of pure water since the completion of the famous "Höch-quell Wasserleitung" some 35 years ago, it has happened now that not only has the reservoir nearly run dry but there is a shortage in the daily influx. Vienna requires a daily supply of 1,000,000 hectolitres (one hectolitre is equal to 22 gallons). In normal times this quantity is easily obtained from the mountain springs whence the water is carried in the aqueducts to Vienna over some 70 or 75 miles. But since Sept. 10th there have only been three rainy days and the total rainfall has been estimated at less than three inches. A snowfall some time ago was also of little assistance and the frosts which have continued since then have made matters still worse. It has therefore been decided to cut off a large number of the water pipes in the houses and to diminish the habitual waste of water in baths, hotels, coffee-houses, and many private buildings. The population suffer under these measures but as long as the abnormal conditions prevail the utmost care is necessary to prevent a veritable "water famine."

Abnormal Development of Teeth in a Baby.

A very rare instance of premature development was demonstrated at the last meeting of the Medical Society, when a baby, aged four weeks, was shown with all 20 teeth in his mouth. The child was born at the normal term and is normal in all respects save that the gums are perforated by 20 small, otherwise apparently quite normal, milk teeth in the proper position. The ossification of the bones, the development of hair, and the state of nutrition are in accordance with the age of the baby, a healthy boy. Such occurrences are not frequent, although several instances have been reported within the last few years. The parents are not near relatives to each other and no etiological factor can be suggested to account for the abnormality.

The Proposed New "Infectious Diseases Act."

The Government has just laid before the House of Parliament the outlines for a new "Infectious Diseases Act," to become law within three months. As there are no general rules adopted uniformly in the different countries which constitute the Empire of Austria, and as science has made enormous progress since the last codification of the public health laws, the new regulations take into consideration all these points of view. The following diseases must be notified, without payment, to the public health officer: bubonic plague, cholera, small-pox, abdominal typhus (enteric fever), dysentery, recurrent fever, blackwater fever, leprosy, anthrax, yellow fever, scarlet fever, diphtheria, epidemic cerebro-spinal meningitis, malleus and rabies, glanders, and all suspicious injuries sustained from animals or through animal tissues. In case any other disease should become epidemic or extremely dangerous to the public, the executive is entitled to deal with it as if it were contained in the above-mentioned list. The notification must be made by the medical man, nurse in charge of the case, or by inn- and hotel-keepers, teachers, and coroners. Persons attacked by any one of these infectious diseases must be isolated if necessary. The lodgings and belonging of the patient and his family must be disinfected, and articles which cannot be dealt with in a satisfactory manner must be destroyed. Compensation must be given, however, in every instance of compulsory destruction. Any place or inhabited house may be put in quarantine. Special physicians may be appointed in times of epidemics to give gratuitous medical assistance, and pensions are to be awarded to them should they be incapacitated in the discharge of their duties, the pension to be paid to the family of any such physician who dies. The expenses of sanitary precautions in times of epidemics are to be borne by the State. The Bill contains no clause dealing with vaccination. It is intended in the future to make vaccination compulsory, but it is deemed advisable to postpone the matter until all negotiations with the local boards have been completed. As violent opposition is expected in this respect the Government wants to make its position quite good before embarking on legislation.

The Prevention of Arterio-sclerosis following the Use of Adrenalin.

In a communication to the Gesellschaft der Aerzte, Dr. Mansfeld explained the details of his experiments to prevent arterio-sclerosis by the use of adrenalin. A series of experiments has brought to light the fact that the injection of adrenalin and oily substances was not detrimental to the intima of the blood-vessels. A series of ten rabbits received daily injections of 2½ grains of adrenalin intravenously and a control series received the same injections with the addition of a subcutaneous injection of cholin (1 grain). The result was that the animals treated with adrenalin showed serious disease of the aorta, whilst those treated with cholin as well showed no lesions whatever. This observation is of the first importance, for some complaints have been made already that the protracted use of adrenalin has been followed by untoward after-effects. Experiments with other substances than cholin did not give such favourable results. Care must be taken to obtain pure cholin as it decomposes readily.

Three Cases of Renal Operations.

Dr. Fabricius recently demonstrated three patients and the very interesting preparations obtained from them. The first patient was a woman, aged 29 years, who had been operated upon several times for stone in the kidney; two stones had been removed successfully, when suddenly after an interval of six weeks of complete health septic fever supervened. In hospital accumulation or retention of pus was diagnosed and catheterisation of the ureter corroborated the diagnosis. But the patient was anxious to be freed from her pain and asked to have the kidney removed. This was done, and the kidney on section proved to be a mass of small abscesses. The incisions into the parenchyma of the organ had completely healed. The second patient complained of turbid urine and radiography proved the presence of an enormous "coral" stone in the kidney. During the operation all the pyramids of the organ became detached from each other, so that after extraction of the stone the kidney consisted of several separate lobes. Nevertheless, the patient made a good recovery, although the stone is one of the biggest that have been removed without extirpation of the organ. A portion of the cortical substance of the kidney had to be removed. The stone had completely filled the

pelvis, had lacerated the pyramids, and weighed 3 ounces; the size was 4 inches by 1½ inches. The third case was that of a man, aged 55 years, who suffered from a swelling in the left lumbar region without any discomfort. A cystic tumour of the kidney was diagnosed and an operation was performed. A large cyst was found replacing the lower half of the kidney and was removed. The upper pole of the organ, together with the ureter, was left behind. The examination of the cyst wall showed it to be one of the very rare instances of cystadenoma of the kidney, whilst the fact that the patient is doing very well now, two years after operation, is also noteworthy, for although there are many people alive and well with only one kidney, there can be very few with one kidney and a half.

Nov. 23rd.

Obituary.

SALVATOR ALOYSIUS PISANI, C.M.G., M.D. MALTA & EDIN., L.R.C.S. EDIN.,

LATE CHIEF GOVERNMENT MEDICAL OFFICER IN MALTA.

Dr. Salvator Pisani, whose death on Oct. 27th has been announced, was an old and prominent inhabitant of the island of Malta, where he was born in 1828 and where, like his father before him, he was for many years the leading medical practitioner. He studied in Malta, where he took the degree of M.D. in 1850, after which he proceeded to Edinburgh, becoming an M.D. of that University three years later. He also took the Licentiateship of the Royal College of Surgeons of Edinburgh. He studied during the next year in Berlin, London, and Paris, and in 1854 he returned to Malta to join his father in practice there. During the Crimean war he proceeded to Scutari to join the hospital of the British troops in which Miss Florence Nightingale was nursing. On returning to Malta he was appointed professor successively of anatomy, midwifery, surgery, and clinical surgery at the University and also surgeon and accoucheur of the Central Civil Hospital. These appointments naturally led to an extensive private practice which he gave up on being appointed chief Government medical officer in Malta, an appointment which gained him the C.M.G. in 1895. He spent the last years of his life in retirement at his residence in Valetta.

THE PROPOSED BRISTOL UNIVERSITY.—A draft of the proposed charter of incorporation of the Bristol University has been deposited in Parliament and now awaits confirmation.

RUSSIAN VIEWS ON INOCULATION AGAINST CHOLERA.—According to the *Novoe Vremya* a council of medical sanitarians has held a meeting at which many authorities were present to discuss the question as to whether it is advisable to inoculate the mass of the population as a prophylactic against cholera. Privat-docent Oleinik held that inoculation could be useful only to the uneducated classes, for the intelligent classes can protect themselves by ordering their lives in a more hygienic manner. The action of serum on the human organism has not yet been determined fully, whilst a great deal depends upon the nature of the serum itself. Private institutions prepare it without any supervision and some medical men declare that even after three inoculations no effect has been observed. Again, sterilised serum is sometimes used, which cannot fail to produce bad results. In future the serum must be carefully inspected. It was decided that each medical man should visit all those whom he had inoculated at their homes and report upon their subsequent condition. All the information so acquired will form the basis of a discussion. Lastly, it was decided to request the Government to supervise the preparation of serum in private establishments. It is quite expected that the cholera will break out afresh in the capital in the spring. The above journal says in anticipation of this (after expressing disappointment that the disease has not disappeared with the cold weather), "if the cholera does not cease when all the filth of the capital is covered with snow, what may we not expect when the snow melts and exposes it again?"

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THE half-yearly session of the General Council of Medical Education and Registration opened at the offices of the Council, 299, Oxford-street, London, W., on Tuesday, Nov. 24th. Sir DONALD MACALISTER, the President, was in the chair.

New Member.

Sir T. CLIFFORD ALLBUTT, K.C.B., introduced to the Council by Dr. NORMAN MOORE, took his seat as representative for the University of Cambridge.

The President's Address.

The PRESIDENT then delivered his address. He said: The Council to-day enters on its second half-century. Fifty years ago, in pursuance of the Medical Act of 1858, it was summoned by the Secretary of State for the Home Department, and meeting in the hall of the Royal College of Physicians, with Dr. Thomas Watson as temporary chairman, elected Sir Benjamin Brodie to be its first President. The Act charged the Council with the duty of creating and maintaining the Medical Register for the information of "persons requiring medical aid." The Register was the instrument devised by the legislature to enable such persons "to distinguish qualified from unqualified practitioners." Thus, by the law of its foundation, the Council's primary purpose was the promotion of a specific public interest of great importance. In constitution and in function it differed from the existing medical faculties and corporations. By its constitution, nine only of its 24 members need be qualified practitioners themselves. The President, the University members, and the Crown members might be laymen. Its function was to safeguard the public by insuring that the Register should be trustworthy. To this end the Council was intrusted with two-fold powers. It had authority to supervise the admission-tests whereby the "qualification" of practitioners was ascertained; it had authority, also, to remove those who, after "qualification," had proved themselves unworthy. From these two powers the manifold activities of the Council, as they are exercised to-day, have slowly but inevitably been developed. Subsequent Acts of Parliament have modified in detail the composition of the Council, or defined more clearly the scope and mode of its action, or imposed upon it additional public duties of various kinds. The decisions of the courts have declared the nature and extent of its jurisdiction and laid down the principles which govern its disciplinary procedure. The enlightened coöperation and criticism of the licensing bodies have enabled it to formulate a standard of "qualification" which is generally accepted not only within the United Kingdom but in many parts of the British dominions beyond the seas. But the root, from which all the rest is but a natural outgrowth, is contained in the brief preamble of the Act of 1858, whose jubilee we commemorate at this meeting. Retrospect is tempting on such an occasion; but in the interest of the Council's time, which in more than one sense is valuable, I propose to resist the temptation to indulge in retrospect from this chair. I had recently the opportunity to trace at some length what appeared to me to be the main lines of the Council's development. My paper has been published in the medical journals and separately, and it is unnecessary that I should now trouble you by repeating its narrative or its comments. But I may be allowed to reiterate my conclusions; they express, as well as I can express it, the outcome of the long and chequered story.

The Medical Council began its life with powers and duties that were indicated rather than defined. It had at first to contend with grave difficulties, internal and external. Like other British institutions, it had to make its way through a tangle of ancient traditions, vested rights, and sacred privileges. It had to "find itself" before it began to be effective. But that it has grown and borne many useful fruits no one can question who studies its history. It has grown because it has kept before it its original purpose—namely, the safeguarding of the public health and well-being. And as a means to that end it has promoted in a remarkable degree the improvement of the

profession of medicine. That improvement was apparent to anyone who recalls the conditions of professional life—educational, ethical, and social—that prevailed in an earlier generation. In a word, the Council is by its nature progressive, and it makes for progress in other bodies. It is the concern of the nation as well as of the profession that its advance should be encouraged, whether by the removal of hindrances or by the bestowal of further powers. On the work it has succeeded in accomplishing, notwithstanding its restrictions, it may well rest its claim to be intrusted with better equipment and a freer field of action. Of its original members, which included leaders in medicine like Brodie, Watson, Green, Acland, Syme, Corrigan, Clark, Hastings, Lawrence, Christison, Stokes, and others, none now survive. Of those who joined the Council towards the end of its second decade we have lost Sir James Pagst, Sir John Simon, Dr. Samuel Haughton, and within the last few weeks Sir Henry Pitman, after he had passed the hundredth year of his life of honourable and honoured service. But happily we are still able to greet their esteemed comrades, Sir William Turner, our only remaining past President; Mr. Pridgin Teale, whom lately his own county of York delighted to honour, as he is honoured wherever he is known; and Lord Lister, *non nobis solum sed toti mundo natus*, the glory of British medicine and the benefactor of the human race. To be colleagues or successors of such men, and of many whom time fails me to enumerate, may well make us, as members of this Council, both proud and earnest—proud that we are privileged to carry on their work; earnest, when we reflect on the responsibility that privilege implies. To the dead and to the living alike we are debtors, for their ideals and for their example. Besides Sir Henry Pitman, there has recently passed from us, in a green old age, Sir John Banks, the most genial of courtly physicians, whose native brilliancy and humour made him an ever-welcome colleague. And we have also to mourn the sudden but assuredly not untimely death of one who, seven years ago, was still our faithful and deeply respected fellow-worker, Dr. James Grey Glover. His intellectual candour, his strong faith in God and man, his courtesy, and his capacity for friendship made him an admirable representative of the practitioners of England. They chose wisely when they chose a man like him to be their spokesman; the Council was the better for his presence, and the richer for the 15 years of his strenuous activity on its behalf.

Of changes in our present membership I have only one to mention. The University of Cambridge has appointed Sir Clifford Allbutt to the seat which I had the honour to occupy from 1889 onwards. His fame and the great place he fills in our profession are known to all of you. But as a colleague who for many years served with him in the medical faculty of Cambridge, and always on the happiest terms of comradeship, I may be allowed to bespeak for him a special welcome. His personal qualities of mind and bearing will speedily procure him your friendship, as his work has already procured your admiration. On another member, hitherto known to us as Mr. Power, His Majesty has been pleased to confer the Knight Commandership of the Order of the Bath, in recognition of his eminent services to the public health. His work as an investigator, an administrator, and a counsellor of the Government and of the people of this country has been unsparingly rendered, often at the cost of his own health, and it has been singularly effective and fruitful. The mark of Royal favour which he has now received was never more worthily bestowed. The Council will join with the profession at large in congratulating Sir William Henry Power on his promotion and in wishing that in greater freedom from official cares his strength may be renewed for further service to the State.

His Majesty has also done special honour to two members of the Council, Dr. James Little and Dr. David White Finlay, by appointing them to be his Honorary Physicians in Ireland and in Scotland respectively. This recognition of the professional position they have gained by their attainments and their personal worth will be heartily approved by the Council. Lastly, it is my duty humbly but gratefully to acknowledge the gracious act of the King with reference to your President, who, happening to occupy this chair on the occasion of the Council's jubilee, has been favoured by the bestowal of a decoration. The Council will, I am sure, appreciate the honours which have been accorded to it and to its members by the Sovereign, esteeming them as an indication of His Majesty's approbation for their efforts to carry out loyally the duties laid upon them by the State, and of His Majesty's desire to encourage all who participate in the Council's work to persevere in their endeavours for the public good. At the present session several questions of national importance, which have been submitted for our consideration by the Lord President of the Privy Council, will be dealt with. The dangers arising from the administration of anæsthetics by untrained or unqualified persons have recently received public attention. A Bill has been proposed for the purpose of obviating some of these dangers; but it contains certain provisions which appear, to me at least, to be questionable, and on these I have ventured on your behalf to make communications to the authorities during the recess. The Executive Committee will have a report to lay before you on the subject.

We have also received for information the Nurses' Registration Bill and the Tuberculosis Prevention (Ireland) Bill, which have lately been under the consideration of Parliament. Each contains clauses referring to this Council on which it behoves us to express our opinion or to give instructions to our officers as to the advice which should be tendered to Government on the questions raised. The Medical Companies Bill has made no progress in the House of Commons during the autumn. Another measure affecting the Council has passed into law during the current session of Parliament. By the Irish Universities Act, which received the Royal Assent on August 1st, provision is made for substituting two new universities in the place of the Royal University of Ireland. Under Section 11 each of the two new Universities is empowered to hold qualifying examinations in medicine, surgery, and midwifery, as if it had been in existence at the passing of the Medical Act, 1886. Moreover, the governing body of each University is entitled to choose one representative to be a member of the General Council, in the place of the single representative of the Royal University. The graduates of the latter University, medical and other, are distributed, according to rules laid down in the Act, between the new universities. These are to have their seats in Dublin and Belfast respectively, and each will from the outset possess a numerous constituency of medical graduates already registered. I may add that your President's name is included in the Act as a commissioner for the University at Belfast, as is also the name of President Windle, lately the chairman of our Education Committee, as a commissioner for that at Dublin. The duty of the commissioners is to frame statutes for the general government of the new universities, and includes the duty of regulating the conditions of admission to medical and other degrees. By the friendly assistance of the Colonial Office and of the Foreign Office a large mass of authoritative information has been obtained respecting the laws regulating the practice of medicine, and the restrictions imposed on unqualified practitioners, throughout the empire and in foreign countries. This information, which reached the Council's office in various forms and in numerous languages, has been carefully analysed and digested by the Registrar and his staff for the use of the Committee on the Prevention of Unqualified Practice. As it is entirely derived from official sources the digest will be of value to the public, and when it has served the immediate purpose of the committee it will be well to issue it as one of the Council's publications. To the best of my knowledge no digest at present accessible surveys so fully and so authentically the existing laws of the civilised world in relation to medical practice. His Excellency the Governor of Bombay has invited me to attend, as his guest, a medical congress convened by him to meet at Bombay in February next and to deliver an address at a general assembly of the congress. In view of the movement which is on foot towards the better regulation of medical qualification and practice in India I should have been glad if it had been possible to accept the invitation. But the exigencies of work here and in Glasgow forbid so long an absence from home as would be necessary and I have had regretfully to decline.

An important declaration of the law, this time by judicial not by legislative authority, has been pronounced with reference to the Dentists Act. The Lord Chief Justice, with Mr. Justice Bigham and Mr. Justice Walton, have, in an appeal against the conviction of an unregistered practitioner of dentistry, decided that certain words (e.g., "painless extraction") employed by him in an advertisement were sufficient to bring him within the terms of Section 3. The words were held in effect to be a statement that the advertiser was

"specially qualified to practise dentistry," although he avoided the assumption of any specific professional title. The scope of this judgment is far-reaching and its effect may be to check certain flagrant abuses against which the dental profession have long and earnestly protested. The position, often maintained in the Council and elsewhere, that the Dentists Act is more effective than the Medical Acts in the restrictions it imposes on the false assumption of professional status and skill, is vindicated. The efforts of the British Dental Association in this and other cases to elicit by judicial pronouncements the full bearing of the Dentists Act as regards unqualified practice, whether by companies or by individuals, have been unremitting and are amply justified by their success. In its desire for the improvement of professional methods and standards of conduct the Dental Association has addressed to the Council a request that it should forthwith legislate against the practice of advertising by registered dentists. The end in view is good, and merits the Council's serious consideration, but it may be questioned whether the means suggested are within the Council's present powers. Our legal advisers will probably have some counsel to offer on the subject during the session. A small number of penal cases will require your careful attention. They are not without gravity, but none of them are likely to occupy so much of your time as one into which you inquired in May last. The appeal against your decision in that case, of which some mention was made at the time, has not taken place. The duration of the last session, protracted by causes beyond our control, involved a serious strain upon the Council. There is every reason to expect that we may be able in some measure to redress matters by confining the labours of the present session within the limits of this week.

In conclusion, I have pleasure in reporting that the improved system of keeping in the office the documents relating to the registers, which has been in preparation for several years, has now been completed both for the Medical and for the Dentists' Register. For each registered practitioner a separate file is provided, in which every paper referring to his career, with his successive changes of address, &c., is preserved. These files are so arranged that immediate reference can be made to every document relating to his registration, and thus any question respecting him can be rapidly and conveniently answered. Already the system has proved itself to be of great utility as regards the ascertaining and maintaining of the accuracy of the registers. The skill and labour bestowed on this important work by the registrar and his assistants have been great and deserve the grateful acknowledgments of the Council. It is proposed in the beginning of next year to issue a circular of inquiry to every registered practitioner, with a view to eliminate as far as possible all remaining errors from the Register.

The President having been formally thanked for his address, the tables showing the results of the last competitions for medical commissions in the Navy, Army, and Indian Army were received and entered on the minutes. A debate, adjourned from last session, followed on the duties of the assistant examiners at the Apothecaries' Hall, Dublin.

WEDNESDAY, NOV. 25TH.

The time of the meeting was occupied by the consideration of one penal case.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. R. Coombes (Section II.), Cambridge and Westminster Hospital.
Medicine.—H. R. Coombes (Sections I. and II.), Cambridge and Westminster Hospital; G. F. C. Harvey (Section II.), London Hospital; and F. H. P. Wills (Sections I. and II.), St. Mary's Hospital.
Forensic Medicine.—N. B. Benjafield, University College Hospital; and R. B. Dawson, Guy's Hospital.
Midwifery.—H. R. Ibbotson, Leeds; J. J. S. Rowe, Charing Cross Hospital; and G. F. Wilson, London Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: H. R. Coombes, R. B. Dawson, and G. F. C. Harvey.

ROYAL COLLEGE OF SURGEONS IN IRELAND: FELLOWSHIP EXAMINATION.—The following candidates having passed the necessary examination have been admitted Fellows of the College:—

R. Bury, J. Craig, P. F. Foran, A. F. Penny, J. Rankin, and E. Sheridan.

The following candidates have passed the primary part of the Fellowship Examination:—

H. A. Driver, J. Gormley, T. M. Thomson, and F. W. Warren.

TRINITY COLLEGE, DUBLIN.—At the Final Medical Examination, Part II., held recently, the following candidates were successful:—

Medicine.—Desmond Drew, Richard J. Attridge, David J. Miller, Henry H. Ormsby, Norman P. Jewell, Wellesley R. Allen, Alexander S. M. Winder, James P. S. Dunn, Harold S. Sugars, Frank N. Smartt, Howard S. Millar, Richard FitzGerald, and Joseph E. N. Ryan.
Surgery.—Gerald G. Mecredy, Henry R. Kenny, Harold S. Sugars, James F. Clarke, Richard J. Attridge, George Halpin, Norman P. Jewell, William A. Nicholson, Gordon A. Jackson, Herbert V. Stanley, Alexander S. M. Winder, John C. Baker, Frank N. Smartt, and Thomas Ryan.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Felix Hirschfeld, *privat-docent* of Medicine; Dr. Georg Abelsdorff, *privat-docent* of Ophthalmology; and Dr. Alfred Blaschko, the well-known dermatologist, have been granted the title of Professor.—*Berne:* Dr. Emil Bürgi, Extraordinary Professor of Medical Chemistry and Pharmacology, has been promoted to the Ordinary Professorship.—*Cologne* (*Academy of Practical Medicine*): Dr. Rudolf Graessner, Senior Staff-Surgeon in the Prussian Army, has been granted the title of Professor.—*Ghent and Liège:* A new diploma of *Medecin-hygiéniste* has been instituted by Royal Warrant. Candidates must possess the degree of Doctor of Medicine, Surgery, and Midwifery and must spend a year in special studies. The examination comprises subjects similar to those required for public health diplomas in English universities.—*Harvard:* Dr. A. Christian has been appointed to the chair of Medicine.—*Leyden:* Dr. E. Gorter has been recognised as *privat-docent* of Children's Diseases.—*Nantes:* Dr. Monnier, Professor of Pathology, has been transferred at his own request to the Chair of Clinical Medicine, in succession to the late Dr. Hervouet.—*Philadelphia* (*Woman's Medical College of Pennsylvania*): Mrs. Harriet L. Hartley, M.D., has been appointed Professor of Surgery.—*Rouen:* Dr. Brunon, Professor of Internal Pathology, has been transferred at his own request to the Chair of Clinical Medicine, in succession to the late Dr. Olivier.—*Würzburg:* Dr. Ackermann has been recognised as *privat-docent* of Physiology.

THE ROYAL DENTAL HOSPITAL OF LONDON.—The annual dinner of the staff and past and present students of this hospital was held at the Whitehall Rooms, Hôtel Métropole, on Saturday, Nov. 21st, when Mr. W. B. Paterson occupied the chair. He was supported on his right by the President of the Royal College of Physicians of London and on his left by the President of the Royal College of Surgeons of England. After the usual loyal toasts the chairman proposed that of "The Past and Present Students of the Royal Dental Hospital and the Dental School" and in an attractive speech recounted some interesting reminiscences of his student days at the hospital and referred to the happy relationships that existed between the staff and students. Mr. J. S. Amoore and Mr. F. G. H. Armin, the former representing the past and the latter the present students, responded. The dean, Mr. J. F. Colyer, replying for the school, referred to the progressive policy of its staff and mentioned that amongst other things which had proved useful in the equipment of the school was the comparatively recent inauguration of a bacteriological department and an x ray department. He attached considerable educational importance to the hospital *Gazette*, by means of which students who had left the hospital for practice could become acquainted with the advances that dental surgery was making. He preached the cult of the clean mouth and reminded his hearers that those who gave close attention to the subject were after all studying part of the great subject of medicine. The toast of "The Visitors" was proposed by Mr. D. P. Gabell, to which Sir Richard Douglas Powell replied. He said that the physician was in keen sympathy with the work of the dental surgeon, which contributed

to the comfort, happiness, and beauty of humanity. Dental surgery, he thought, warded off senility, because with a good set of teeth the better digestion of food was assured. He was not quite certain, however, whether after all Parr did not reach his great age owing to the fact that he had no teeth and was thus compelled to live on milk, of which possibly a good deal was sour, and Metchnikoff had pointed out the usefulness of the lactic acid bacillus in prolonging life by combating auto-intoxication. The proceedings, which were enjoyable throughout, closed with the toast of "The Chairman," proposed by Mr. John J. Andrew, President of the British Dental Association, a speech the kindly sentiments of which the chairman gracefully acknowledged. During the evening an excellent programme, comprising madrigals, glees, and catches, most of which were of the eighteenth century, was sung by the Frau Musika Vocal Quartette.

THE NATIONAL DENTAL HOSPITAL.—The students' annual dinner of this hospital was held at the Trocadéro Restaurant, London, on Nov. 20th, under the chairmanship of Sir William Henry Allchin, who, in proposing the toast of "The Hospital and School," said that though the qualification of L.D.S. was excellent in all respects, still, if it were possible for dentists to hold a general medical qualification it would be to their advantage because then there could be no question as to the propriety or otherwise of dental surgeons administering an anæsthetic. Further, it seemed to him that if every dentist qualified in general medicine and surgery it would add much to the collective dignity of the profession. Mr. P. S. Spokes, the dean of the school, in the course of his reply to the toast, said that in regard to additional medical qualifications, if everyone had the time and money at his disposal then he thought that everyone should, before applying himself to the dental profession, finish his medical training. He claimed, however, that men who passed the L.D.S. were able dental surgeons and well fitted for their work. Other speakers included Mr. A. Pearce Gould, Mr. K. W. Goadby, and Mr. C. W. Glassington.

BRITISH MEDICAL TEMPERANCE ASSOCIATION.—The annual meeting of the British Medical Temperance Association was held in the rooms of the Medical Society of London on Nov. 20th, the attendance being good. The President, Professor G. Sims Woodhead, occupied the chair, and among others there were present Dr. V. H. Rutherford, M.P., Surgeon-General George J. H. Evatt, C.B., Dr. Heywood Smith, Dr. T. N. Kelynack, Dr. G. B. Basil Price, Dr. E. Claude Taylor, Dr. R. Leslie Ridge, and Dr. C. F. Harford. The President paid a warm tribute to the services of the late Dr. J. J. Ridge who had acted as honorary secretary of the association for 32 years. A discussion followed on the future work and aims of the association in which many spoke. The policy outlined was that the association should be strictly medical and non-political, working for the advancement of knowledge of the medical and scientific side of the alcohol problem. It was announced that the *Medical Temperance Review* would be continued and published quarterly. The association has 671 members and 237 student associates.

THE Prussian Academy of Sciences has granted to Dr. Gustav Fritsch £100 to enable him to publish a work on the area centralis of the human retina.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

THE Parliamentary session seems likely to be more prolonged than was anticipated when the autumn sitting began in October. The most sanguine estimates are that Parliament will be prorogued a few days before Christmas. However, if this confident anticipation is to be realised there must be a considerable acceleration of the rate of progress of the Ministerial programme of legislation. The House of Commons has still to deal with such important subjects as education, the miners' eight hours' day, and housing and town planning, and unless the Government abandons some of its Bills the statement that the session will extend into January seems well founded.

HOUSE OF COMMONS.

THURSDAY, NOV. 19TH.

The International Commission on Opium.

Mr. THEODORE C. TAYLOR asked the Secretary of State for Foreign Affairs what were the terms of reference of the International Commission on Opium which was to meet in Shanghai in January next, and whether the inquiry would cover the use of morphine and cocaine.—Mr. MCKINNON WOOD (on behalf of Sir EDWARD GREY): The terms of reference are still under consideration and they will be communicated to the honourable Member as soon as they have been definitely settled.

The Grants to County Infirmaries in Ireland.

Mr. O'DOWD asked the Chief Secretary to the Lord Lieutenant of Ireland whether any portion of the grant given by a county council to a county infirmary could be applied towards the maintenance of a separate institution for tuberculous patients.—Mr. CHERRY (the Attorney-General for Ireland) replied on behalf of Mr. BIRRELL: The reply to this question is in the negative.

Hop Substitutes in the Manufacture of Beer.

Answering Mr. SUMMERBELL Mr. ASQUITH said: I understand that my right honourable friend the Chancellor of the Exchequer will shortly introduce a Bill to prohibit the use of hop substitutes in the manufacture of beer.

Tuberculous Milk in London.

Mr. ELLIS DAVIES asked the honourable Member for South Somerset, as representing the President of the Board of Agriculture, whether his attention had been drawn to the fact that out of 92 samples of milk sampled by the officials of the London County Council last week 23·9 per cent. were found to be tuberculous; and what steps, if any, the Government proposed to take to deal with the disease.—Sir EDWARD STRACHEY replied: The Board has seen a copy of the report of the Public Health Committee of the London County Council to which my honourable friend is perhaps referring. It would appear that the samples examined were taken at various times during the last quarter. The Board is carefully considering whether it can take any action to deal with the matter.

MONDAY, NOV. 23RD.

Petrol Accidents.

Mr. PERCY BARLOW asked the Secretary of State for the Home Department whether his attention had been called to the frequency of accidents involving loss of life and personal injuries arising from the ignition or explosion of petrol and other vapours; and whether he was prepared to take any, and if so what, steps to ascertain whether any means existed of preventing such accidents.—Mr. GLADSTONE answered: I have had this matter under my consideration, and I hope shortly to be able to appoint a small committee to consider the question of the use of mechanical devices to diminish the dangers attendant on the storage of petrol spirit.

The Sale of Food and Drugs Act in Scotland.

Mr. VINCENT KENNEDY asked the Secretary for Scotland to state the numbers of samples taken under the Sale of Food and Drugs Act, or the corresponding Scotch Act, for the years 1905–06–07; how many prosecutions were instituted and with what result; and what was the average annual cost of working this department.—Mr. SINCLAIR replied: The number of formal samples examined by analysts on behalf of local authorities in Scotland for the years ended Sept. 30th, 1905, 1906, and 1907, and the number of prosecutions and the result of such prosecutions were as follows:—

	1905.	1906.	1907.
Number of samples	7221	7614	6842
Number of prosecutions ...	373	419	369
Number of convictions	300	323	282

No information is collected by the Local Government Board for Scotland regarding the annual cost of working the Sale of Food and Drugs Act.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ALLEN, R. W., M.B., B.S. Lond., has been appointed Clinical Pathologist to the Mount Vernon Hospital.

BAGGS, J. C., L.S.A., has been appointed Medical Officer to the Siamese Government at Tuket.

BOND, FRANCIS THOMAS, M.D. Lond., M.R.C.S., F.R.S. Edin., has been re-appointed Medical Officer of Health for the Gloucestershire Combined Sanitary District.

CLARKE, WALTER TRAVERS, M.R.C.S., L.R.C.P. Lond., has been appointed School Medical Officer for Morley, Yorks.

COOK, E. N., M.B., B.S., M.R.C.S., L.R.C.P., has been appointed House Surgeon at University College Hospital.

CORFIELD, CHARLES, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Dental Anæsthetist at the Bristol General Hospital.

ETTLES, WILLIAM, M.D., C.M. Aberd., F.R.C.S. Edin., has been appointed Pathologist to the Royal Eye Hospital.

GILL, JOHN WALLIS, L.R.C.P. Lond., M.R.C.S., has been appointed District Medical Officer by the Liskeard (Cornwall) Board of Guardians.

GOUGH, WILLIAM, M.B., B.S., B.Sc. Lond., F.R.C.S. Eng., has been appointed Honorary Medical Officer to the Leeds Maternity Hospital.

HALLINAN, T. J., M.R.C.S., L.R.C.P. Lond., has been appointed Second Casualty Officer to the East London Hospital for Children and Dispensary for Women, Shadwell, E.

HASWELL, NARCIS RICHARD, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for the Helston (Cornwall) Rural District.

HETT, G. SECCOMBE, M.B. Lond., F.R.C.S. Eng., has been appointed Surgeon Laryngologist to the Mount Vernon Hospital.

KNIGHT, WILFRED EDWYNE, M.B., L.R.C.P. Edin., has been appointed District Surgeon and District Health Officer for the Upper Umlazi Division, Natal.

LOOSELY, CHARLES J., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Anæsthetist to the Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.; and Joint House Anæsthetist to the Royal Dental Hospital, Leicester-square, W.

PERRY, GEORGE, M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon at the East London Hospital for Children and Dispensary for Women, Shadwell, E.

QUIRK, E. J., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Anæsthetist to Charing Cross Hospital.

RELTON, CHARLES DUNCAN, M.B., B.S. Durh., has been appointed Medical Officer for the Clyst Hydon District by the Honiton (Devon) Board of Guardians.

SCOTT, SYDNEY R., M.S. Lond., F.R.C.S. Eng., has been appointed Assistant Aural Surgeon to St. Bartholomew's Hospital.

SINGER, CHARLES, M.A., M.B., B.Ch. Oxon, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Registrar of the Research Department of the Cancer Hospital.

SMYTH, ROBERT BRICE, M.B., B.Ch., B.A.O. Dub., has been appointed Medical Superintendent of the Gloucester County Asylums.

STOKES, K. H., M.B., B.S., M.R.C.S., L.R.C.P., has been appointed House Physician at University College Hospital.

WILLIAMSON, OLIVER K., M.D., B.C. Cantab., has been appointed Assistant Physician to the East London Hospital for Children and Dispensary for Women, Shadwell, E.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERDEEN, CITY (FEVER) HOSPITAL.—Resident Physician. Salary £100 per annum, with board.

ALBERT DOCK HOSPITAL, Connaught-road, E.—Senior House Surgeon and Registrar. Salary £100 per annum, with board, residence, and washing. Also House Surgeon. Salary £50 per annum, with board, residence, and washing.

BARNSTAPLE, NORTH DEVON INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

BETHLEM HOSPITAL.—Two Resident House Physicians (unmarried) for six months. Salary at rate of £25 each per quarter, with apartments, board, and washing.

BLACKBURN AND EAST LANCASHIRE INFIRMARY.—Junior House Surgeon. Salary £30 per annum, with board, washing, &c.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—House Surgeon, unmarried. Salary £160, with rooms, coals, gas, and attendance.

BRISTOL ROYAL INFIRMARY.—Ophthalmic and Obstetric House Surgeon. Salary £75 per annum, with board, lodging, and washing.

CAMBRIDGESHIRE, &c., ASYLUM, Fulbourn.—Second Assistant Medical Officer, unmarried. Salary £120 per annum, with board, lodging, and attendance.

CARDIFF CITY MENTAL HOSPITAL, Whitchurch.—Junior Assistant Medical Officer, unmarried. Salary £150, with quarters and all found.

CHESHIRE, CROSSLEY SANATORIUM, Delamere Forest.—Assistant Medical Officer. Salary £100 per annum, with board, apartments, and laundry.

CHILDREN'S INFIRMARY, Carshalton, Surrey.—Senior Assistant Medical Officer. Salary £250 per annum. Also Assistant Medical Officer. Salary £150 per annum, both with board, lodging, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with rooms, board, washing, and attendance. Also Junior House Surgeon. Salary £30 per annum, with rooms, board, washing, and attendance.

CROYDON GENERAL HOSPITAL.—Senior and Junior House Surgeons. Salaries £105 and £60 per annum respectively, with board, laundry, and residence.

DORSET EDUCATION COMMITTEE.—Principal County School Medical Officer. Salary £300 per annum and £65 per annum for travelling and other expenses. Also Assistant School Medical Officer. Salary £150 per annum and £65 per annum for travelling and other expenses.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £100 per annum, with board, residence, attendance, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, lodging, and washing.

GLOUCESTER COUNTY ASYLUMS.—Senior Assistant Medical Officer. Salary £250 per annum, with board, lodging, and washing. Also Junior Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

HAMPSTEAD GENERAL HOSPITAL.—Pathologist. Salary £100 per annum.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Resident Medical Officer, unmarried. Salary £70 per annum, with full board.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £30, with board and residence.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—House Surgeon. Salary £50 per annum, with board and laundry. Also Assistant House Surgeon. Salary £40 per annum, with board and laundry. (Both females.)

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Senior House Surgeon. Salary £80 per annum.

KINGSTON-UPON-HULL, CITY AND COUNTY OF.—Public Analyst and Bacteriologist. Salary £350 per annum.

LEEDS, CITY OF, INFECTIOUS DISEASES HOSPITALS AND SANATORIUM.—Resident Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

LEEDS GENERAL INFIRMARY.—House Physician, also Ophthalmic House Surgeon for six months. Board, washing, and lodging provided.

LEEDS TUBERCULOSIS ASSOCIATION SANATORIUM, Gateforth, near Selby.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

LINCOLN COUNTY HOSPITAL.—Senior House Surgeon, unmarried. Salary £125 per annum, with board, lodging, and washing.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £100 per annum, with rooms, attendance, board, and washing.

MANCHESTER ROYAL INFIRMARY.—Medical Registrar. Salary £70 per annum.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Third and Fourth House Surgeons for six months. Salaries £25, with board and residence.

MEDICAL MISSION HOSPITAL SETTLEMENT OF WOMEN WORKERS, Canning Town.—Assistant Doctor (female) for six months. Board, residence, and laundry.

MILROY LECTURES ON STATE MEDICINE AND PUBLIC HEALTH.—Milroy Lecturer for 1910.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, with apartments, attendance, light, and fuel.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—Anæsthetist.

PRESTON ROYAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, washing, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Assistant Physician.

ROYAL EAR HOSPITAL, Soho.—House Surgeon for six months. Salary at rate of £40 per annum.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Medical Registrar, Surgical Registrar, Clinical Assistants, and Junior Obstetric Assistant (all females).

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Honorary Anæsthetist.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Honorary Medical Officer.

ST. THOMAS'S HOSPITAL.—Demonstrator in Physiology. Salary £100 per annum.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon. Salary at rate of £50 per annum, with board and residence.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—House Surgeon, unmarried. Salary £60 per annum, with board and residence.

SOMERSET, WILLITON UNION.—Medical Officer for the Urban Parish of Watchet. Salary £22 10s. per annum, with fees. Also Medical Officer for the Williton District of the Union. Salary £65 per annum, with fees.

SUNDERLAND, MONKWEARMOUTH AND SOUTHWICK HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £75 per annum.

THROAT HOSPITAL, Golden-square, W.—Assistant Surgeons.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Assistant Surgeon.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry provided.

WEST RIDING OF YORKSHIRE.—Assistant Medical Officer. Salary £250 per annum, rising to £400.

WILLESDEN URBAN DISTRICT COUNCIL ISOLATION HOSPITAL.—Resident Deputy Medical Superintendent, unmarried. Salary £125 per annum, rising to £200, with board, lodging, and washing.

WORCESTERSHIRE OPEN-AIR SANATORIUM, Knightwick.—Medical Officer and Wife. Joint salary £150 per annum, with board and house.

Births, Marriages, and Deaths.

BIRTHS.

ARNOLD.—On Nov. 19th, at Toorak, Torquay, the wife of Gilbert James Arnold, F.R.C.S., of a son.

BANTING.—On Nov. 17th, at Beeleigh, West Hill, Putney, the wife of Cecil Banting, M.D., F.R.C.S., of a daughter.

GATES.—On Nov. 17th, at Via Palestro A., Florence, the wife of Edward Alfred Gates, M.D., of a son.

WHATLEY.—On Nov. 8th, at Knowle, Warwickshire, the wife of J. L. Whatley, M.R.C.S., L.R.C.P. Lond., of a daughter.

DEATHS.

EASTMENT.—On Nov. 17th, at Midhurst, John Willot Eastment, M.R.C.S., L.R.C.P. Lond., late of Cosham, Hants.

HORDER.—On Nov. 22nd, Edward George Horder, F.R.C.S. Edin., aged 56 years.

ROWLEY.—On Nov. 19th, at 32, Huddersfield-road, Barnsley, Yorks, Charles Octavius Rowley, M.R.C.S. Eng., L.S.A. Lond., aged 85 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

During the week marked copies of the following newspapers have been received:—*Bath Weekly Argus, Surrey Advertiser, Dundee Advertiser, Scientific American, Surrey Times, Nottingham Guardian, Cardiff News, Manchester Guardian, Birmingham Post, St. James's Gazette, Stockport Advertiser, Burton Mail, Hertfordshire Mercury, Bolton Journal, Edinburgh Evening News, Morning Post, Scotsman, Belfast Evening Telegraph, &c.*

Notes, Short Comments, and Answers to Correspondents.

QUEEN ANNE'S PHYSICIANS.

IN "Queen Anne and Her Court," by Mr. P. F. W. Ryan, recently published by Messrs. Hutchinson and Co., there is much to interest medical readers. The work consists of a series of splendid portraits of the men and women—the *dramatis personæ* of one of the greatest dramas of English history. Here is the author's description of Dr. John Arbuthnot and his quarters in St. James's Palace:—

"Passing through the darkening galleries and cloisters one comes to a remote wing of the palace, where in dingy quarters a gentleman of forty, pleasant of face, with a humorous twinkle in his eye, kept his Court amongst his books. This evening he is less serene than is his wont. His apartment has somewhat the air of discomfort one associates with unusual preparations. Everything here is too trim, too mathematical to please John Arbuthnot. His books have been dusted and disarranged. His easy chair is in rebellion; they have made it look formal; it is at the angle of irritation with regard to the light, and he can neither rest his feet on the mantelpiece nor on the table. One must make sacrifices for one's friends or lose them; and John Arbuthnot, physician extraordinary to Queen Anne, was not a curmudgeon to grumble because his rooms were uncomfortably neat to receive Her Majesty and a wedding party. Yes, a wedding party, no less; and for a secret wedding, too. Death and damnation! If people would marry why not by daylight; or if by candlelight, why not in their own rooms!

Arbuthnot was not only a physician, he was a man of wit and learning and as cheerful as he was gifted. Swift said of him that he was the first wit in London and Pope celebrated his medical skill in the lines:—

> 'Friend to my life, which did not you prolong
> The world had wanted many an idle song?'

His rooms in St. James's were the resort of every pleasant fellow employed at Court, and of all the wits of the town. Thither they made their way of an evening from the theatres and coffee-houses to play at cards and punish a bottle while discussing the latest book, or pamphlet, or comedy. They did justice to the scandal of the hour and when fresher topics flagged it was always easy to poke fun at the Queen above the Queen—Her Majesty, Sarah."

Then follows a most amusing description of the secret wedding of Abigail Hill and Captain Masham, the Queen stealing on tip-toe to the ceremony in mortal terror of being caught by her arch-enemy and tyrant Sarah, Duchess of Marlborough.

Speaking of Dr. Radcliffe the author says: "He was the first of his profession and a high Tory, with little love for princes or princesses who owed their dignities to the Revolution. Radcliffe offended Anne by declining to hasten to St. James's Palace when she imagined she needed his presence. 'Tell Her Highness,' said Radcliffe, 'nothing ails her but the vapours.'" He was summoned to the death-bed of Anne's son, the young Duke of Gloucester. On being told that the patient had been bled he replied that they had destroyed the Prince. "You may finish him," he said, "I will not prescribe." It was Radcliffe who, when summoned to the bedside of William III., looking at the King's swollen legs said, "I would not take your two legs for your three kingdoms." The well-known story of the encounter between Radcliffe and the great painter Sir Godfrey Kneller bears re-telling. They were good friends and to facilitate their friendly intercourse a door was put into the wall that separated their two gardens in Kensington. But the doctor's maids stole the painter's flowers. The painter then sent a note saying that he would take the door away and brick up the aperture. To this the doctor replied that he might do anything he liked to the door, except paint it. Kneller responded that he was willing to take anything from Dr. Radcliffe, except his physic.

"THE HUMAN WOMAN."

WE cannot publish much of the correspondence which we have received arising out of our editorial remarks of last week upon Lady Groves's recent work with this title. Lady Groves's work puts forward the arguments on her side. We have expressed our views on them frankly, but we do not claim to have settled the whole of a difficult question. Most of the points at issue are before our readers and they must make up their own minds.

THE NEED OF MEDICAL MEN IN CHINA.

IN his annual report, just received at the Foreign Office, Sir Alexander Hosie, acting commercial attaché to the British Legation at Peking, observes that "at a time when the Chinese Government has made up its mind to eradicate the opium habit, China requires the services of thousands of medical men to help the people who are smokers to rid themselves of the craving for the drug, and she does not possess them. She also requires their services to diminish the tremendous infant mortality of the country and to remedy those insanitary conditions to which much of that mortality is due. It is true that there are medical colleges in Hong-Kong and in several cities of China, but their graduates are merely a drop in the ocean of the Empire's requirements." In another section of his report, dealing with imported medicines, Sir Alexander Hosie states that Japanese goods take the lead, British coming second. The Japanese importers aim at reaching the poor in China by making up their medicines in small doses, with labels in Chinese setting forth the methods of use and the diseases which they are intended to cure.

GARBAGE-MONGERS AT WIGAN.

AT the Wigan borough police court on Nov. 19th two hawkers were summoned for being in possession of 27 pieces of diseased meat for the purpose of sale and intended for the food of man. Evidence was given that the meat was "unsound, diseased, and as soft as rags, and not fit for human food." The defendants did not appear and a warrant was issued for their arrest. Another case was heard by the Wigan justices on the following day in which Joseph Harrison was summoned for exposing for sale a forequarter of beef which had tubercles on the pleura; the beef was condemned and destroyed. Although clear evidence was given by the medical officer of health as to the diseased condition of the meat and the danger to the community caused by the sale of tuberculous meat, evidence which compelled the bench to acknowledge the case as proved, the defendant was let off on payment of the costs only. It would be interesting to know if this leniency was the result of the arguments of the defending solicitor who adduced Professor Koch's views on bovine tuberculosis and also suggested that "the highest authorities contend that although there is a slight tuberculosis in meat it is all the better for the consumer."

METRIC SYSTEM.

To the Editor of THE LANCET.

SIR,—I observe that you notice in THE LANCET of Nov. 14th a new invention entitled the "Versimetric" Chart which is likely to be useful. This encourages me to write you these few lines to explain two little rules for converting the linear metric measures into approximate English equivalents, as follows: Take the denominators of the fractions of the metre which are tenths and call them ninths of a yard; thus, one decimetre equals one-ninth of a yard, one centimetre equals one-ninetieth of a yard, one millimetre equals one-nine-hundredth of a yard approximately. As the yard is 36 inches and 36 is divisible by both 9 and 18, and 90 or 900 are both divisible by the same divisors and the latter by 36 also, it is easy to discover that a centimetre, or $\frac{1}{100}$th yard or $\frac{9}{900}$ equals $\frac{2}{5}$ inch and that a millimetre or $\frac{9}{900}$ equals $\frac{1}{25}$ inch. The metre itself approximately equals ten-ninths of a yard (40 inches). The second rule is to multiply the number of centimetres by 4 and divide by 10 which simply means placing the decimal point to the left of the last figure of the product—e.g., 5 centimetres (multiplied by 4 and divided by 10) equal 2·0 inches; 12 centimetres (multiplied by 4 and divided by 10) equal 4·8 inches, and so on. To turn inches into centimetres multiply the number of inches by 10 and divide by 4—e.g., 6 inches (60 ÷ 4) equal 15 c.m. These rules will only apply to small measures.

I am, Sir, yours faithfully,

Nov. 16th, 1908. F.

A HYGIENIC PRACTITIONER.

A PAMPHLET has been placed in our hands entitled "Are Medicines and Operations Necessary?" The author is one I. Brozel and the book, which is marked "No. 1 of Brozel's Hygienic Library: Tenth Thousand," is an impudent attack upon the medical profession as well as an invitation to the public to go to the writer "for advice and treatment, paying 10*s.* 6*d.* and 21*s.* per month."

STERILISATION IN HYPODERMIC INJECTIONS.

To the Editor of THE LANCET.

SIR,—In these days of hypodermic injections, can any of your readers suggest any way of quickly sterilising both the syringe and the liquid to be injected? Lysol and other irritant antiseptics added to the liquid and used to lubricate the piston of the syringe simply irritate the subcutaneous tissues so much as to make the patient sometimes refuse further treatment, while boiling the syringe for each patient causes much loss of time.—I am, Sir, yours faithfully,

Nov. 19th, 1908. SYDNEY WHITAKER.

AN AFRICAN ANTIDOTE TO SNAKE POISON.

Mr. J. F. Herbst, assistant resident magistrate at Rietfontein, Cape Colony, in a report on the large tract of land known as the Kalahari Desert, describing the natives of that region and their habits, observes that the personal possessions of a Bushman consist of a few lean and hungry dogs, a short but heavy knobkerrie, a long bone tsamma knife, a bow and arrows, the dried body of the "gnubo" snake as an antidote against snake-bite, a skin bag as a receptacle for these articles, and a tin for use as a kettle. The "gnubo" snake is very rarely found, spending most of its time underground. It is small, of a brown colour, and said to be very poisonous. There are two kinds—one with two small, short, fore-feet. The dried body is carried by all natives in the Kalahari district and in German South-West Africa and the dried flesh, ground to a powder and rubbed into the incised wound, is said by all to be an absolutely safe antidote to the most virulent snake poison. It is said to draw the poison "out in a stream." Some "gnubo" was analysed in Cape Town some years ago but no properties were found that could account for this action.

AN ALTERNATIVE CHEST-PIECE FOR SKINNER'S STETHOSCOPE.

Mr. H. J. Phillips, medical superintendent of the London Open-air Sanatorium, has sent us a little accessory for Skinner's stethoscope which he has devised, and which is made by the Holborn Surgical Instrument Company, Limited. It consists of a vulcanite chest-piece of the same circumference as the lower metal end of the stethoscope, which can be used in children and other patients whose costal interspaces are too narrow for the accurate apposition of the full-sized chest-piece. Mr. Phillips's idea is not new; we remember that a physician to a general hospital employed a similar chest-piece 20 years ago, but we mention it as it may be useful to practitioners who do not care to apply the bare metal of a stethoscope's Y-piece directly to the chest.

OUTSIDE BALCONIES TO HOSPITALS.

THE Secretary of a provincial general hospital of 75 beds finds himself in the fortunate position of having some money to spend. This money has been provided for the construction of outside balconies communicating with certain of the wards. But he and his committee would like to see a few hospitals where these balconies either form part of the original building or have been added in a satisfactory way. Perhaps some of our readers can give the desired information.

Phthisis.—Our correspondent, being a medical man, could probably obtain the information he desires direct from the author. We have no further information than that sent us by our correspondents, and think it quite likely that the paper was not read *in extenso*. We could possibly forward a letter.

Anonymous.—We should like to receive for our own satisfaction a communication from the pharmaceutical chemist who has inclosed to us a communication from Dr. Kilmer and Co., manufacturing chemists.

A. L. F.—In our view the bond is meant to exclude such posts as our correspondent mentions.

J. C.—Will our correspondent kindly repeat his question?

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

TUESDAY.

THERAPEUTICAL AND PHARMACOLOGICAL SECTION (Hon. Secretaries—J. Gray Duncanson, H. Charles Cameron): at 4.30 P.M.

Papers:

Prof. Ralph Stockman: The Action of Salicylates in Rheumatic Affections.

Dr. David B. Lees: The Effective Treatment of Acute and Subacute Rheumatism.

THURSDAY.

NEUROLOGICAL SECTION (Hon. Secretaries—Leonard G. Guthrie, E. Farquhar Buzzard): at 4.30 P.M.

Clinical Meeting:

Cases will be shown by Dr. Turney, Dr. Batten, Dr. Collier, Dr. Gibb, Dr. Buzzard, and others.

FRIDAY.

LARYNGOLOGICAL SECTION (Hon. Secretaries—George C. Cathcart, Atwood Thorne): at 5 P.M.

Cases and Specimens:

Dr. Dundas Grant: (1) Immobility of Left Vocal Cord; (2) Epithelioma of Uvula and Soft Palate.

Mr. T. Jefferson Faulder: (1) Stenosis of Larynx in a Child; (2) Cervical Fistula in a Boy.

Dr. J. W. Bond: (1) Epithelioma of Palate in a Boy aged 16; (2) Fibroma of Naso-pharynx.

Dr. Pegler: Tuberculous Granuloma of Triangular Cartilage of Septum.

Mr. A. L. Whitehead: Skiagram of Empyema of Frontal Sinus.

Dr. Jobson Horne: Lupus of the Epiglottis.

Dr. Andrew Wylie: Osteo-fibroma of the Maxilla.

Mr. G. Seccombe Hett: Abnormalities of Septum in Animals.

SATURDAY.

OTOLOGICAL SECTION (Hon. Secretaries—W. H. Kelson, Hunter F. Todd): at 10 A.M.

Cases, &c.:

Mr. A. L. Whitehead: A Case of Thrombosis of the Right Lateral Sinus, in which the Clot extended beyond the Torcular Herophili into the Lateral Sinus of the Opposite Side; Operation; Recovery.

Mr. Sydney Scott: A Case of Cerebellar Abscess Secondary to Infective Labyrinthitis associated with Acute Inflammatory Œdema of the Brain; Recovery; Details of Operative Procedures.

Mr. C. E. West and Mr. Sydney Scott: A Case of Infective Meningitis Secondary to Infection of the Labyrinth successfully treated by Trans labyrinthine and Lumbar Drainage.

Mr. C. E. West: A Case of Purulent Encephalitis treated by Drainage and Removal of Infected Brain Tissue.

Mr. MacLeod Yearsley: Microscopic Slide of a Tumour of the Auditory Nerve (shown at the last meeting).

Mr. Urban Pritchard: Syringe for Use after the Radical Post-aural Operation, &c.

Mr. A. Cheatle: Specimens illustrating the Surgical Anatomy of the Temporal Bone.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

CHILD STUDY SOCIETY LONDON, Parkes Museum, Margaret-street, W.

THURSDAY.—8 P.M., Dr. F. H. Hayward: Education and Recent Studies in Heredity.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.

THURSDAY.—4.15 P.M., Proposed Dinner. Clinical Cases.

RÖNTGEN SOCIETY, 20, Hanover-square, W.

THURSDAY.—8.15 P.M., Dr. H. Manders: Phenomena observed in Electrical Currents of Continuous Oscillation.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Dr. S. D. Clippingdale: West London Rivers, Extant and Extinct, and their Influence upon the Fertility and Salubrity of the Districts through which they Pass or Passed.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY.—12 (noon), Prof. Shattock: Lipoma. (Museum Demonstration.)

FRIDAY.—5 P.M., Sir W. Watson Cheyne, Bart.: The Treatment of Wounds. (Bradshaw Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. G. Little: Clinique (Skin). 5.15 P.M., Lecture:—Dr. S. R. Wells: Some Points in the Diagnosis and Treatment of Diseases of the Aortic Valve.

TUESDAY.—4 P.M., Dr. G. A. Sutherland: Clinique (Medical). 5.15 P.M., Dr. H. Campbell: The Treatment of Heart Disease.

WEDNESDAY.—4 P.M., Mr. M. White: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. C. R. Box: On Enlargement of the Epiphyses in Infants and Young Children.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. A. Carless: Some Points in the Surgery of the Biliary Passages.

FRIDAY.—4 P.M., Mr. W. Dodd: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Mr. Etherington-Smith: Demonstration on Surgical Cases. 12 noon, Dr. Low: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Saunders: Clinical.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Hood: Some Clinical Observations on Heart Disease.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Pritchard: On the Diagnosis and Treatment of Diphtheria.

THURSDAY.—10 A.M., Mr. Etherington Smith: Demonstration on Surgical Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Ethrington-Smith: Fistula.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eyes. 2.30 P.M., Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. Lawrence: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Prof. Hewlett: The Ætiology of Malignant Disease.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. Special Lecture:—Dr. Rankin: Aphasia.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. Carson); X Rays. 4.30 P.M., Medical In-patient Clinic (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles).
WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 4.30 P.M., Dr. S. J. Gilfillan: Demonstration of Cases of Mental Disease at the Colney Hatch Asylum.
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. H. W. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel).
FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations (Mr. W. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.
THURSDAY.—6 P.M., Chesterfield Lecture:—Coccus Diseases: (1) Impetigo Contagiosa; (2) Furuncle; (3) Carbuncle; (4) Coccogenic Sycosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.
TUESDAY.—3.30 P.M., Dr. Buzzard: Myelitis.
FRIDAY.—3.30 P.M., Dr. Buzzard: Myelitis.

HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, Welbeck-street, W.
THURSDAY.—5 P.M., Dr. F. S. Palmer: Anterior Poliomyelitis.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.
THURSDAY.—4 P.M., Lecture:—Mr. Addison: A Demonstration on Selected Surgical Cases.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (1st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (2nd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

THURSDAY (3rd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M).

FRIDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (5th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospital operations are performed daily.

EDITORIAL NOTICES

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 26th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 20	30·13	W.	...	60	49	37	38	39	Hazy
,, 21	30·02	WNW	...	69	49	39	42	44	Fine
,, 22	29·53	W.	0·16	65	58	44	54	56	Cloudy
,, 23	29·74	N.W.	0·08	72	51	46	45	48	Cloudy
,, 24	30·17	S.W.	...	59	55	39	42	43	Cloudy
,, 25	30·06	S.W.	0·02	75	52	43	45	47	Cloudy
,, 26	30·15	S.W.	...	62	53	45	45	47	Cloudy

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